Appendix P

Biologic Assessment for the Grand Junction Field Office

United States Department of the Interior
Bureau of Land Management

BIOLOGICAL ASSESSMENT

Grand Junction Field Office Resource Management Plan

Grand Junction Field Office
Bureau of Land Management
2815 H Road
Grand Junction, Colorado 81506
October 2014

BLM

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ACRONYMS AND ABBREVIATIONS

	Full Phrase
ACEC	Area of Critical Environmental Concern
AUM	animal-unit month
BA	biological assessment
BLM	United States Department of the Interior, Bureau of Land Management
BLM lands	surface acres administered by the BLM
BMP	best management practice
BO	biological opinion
CCR	Colorado Code of Regulations
CFR	Code of Federal Regulations
CHU	Critical Habitat Unit
CIAA	cumulative impacts analysis area
CNAP	Colorado Natural Area Program
CNHP	Colorado Natural Heritage Program
COA	Condition of Approval
CPW	Colorado Parks and Wildlife
CSU	controlled surface use
EIS	environmental impact statement
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act of 1973
FLPMA	Federal Land Policy and Management Act of 1976
FR	*Federal Register*
GJFO	Grand Junction Field Office
LBCWHR	Little Book Cliffs Wild Horse Range
NCA	National Conservation Area
NEPA	National Environmental Policy Act of 1969
NSO	no surface occupancy or surface-disturbing activities
OHV	off-highway vehicle
PGH	Preliminary General Habitat
PPH	Preliminary Priority Habitat
PRMP	proposed resource management plan
RMP	resource management plan
ROW	right-of-way (lands and realty)
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
SSR	site-specific relocation
T&E	threatened and endangered
TL	timing limitation

ACRONYMS AND ABBREVIATIONS

	Full Phrase
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Department of the Interior, Fish and Wildlife Service
WSA	Wilderness Study Area
WSR	Wild and Scenic River

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SECTION 1
INTRODUCTION

1.1 BACKGROUND

The United States Department of the Interior, Bureau of Land Management (BLM) is preparing a Proposed Resource Management Plan (RMP)/Final Environmental Impact Statement (EIS). These combined documents provide direction for managing public lands administered by the Grand Junction Field Office (GJFO) in Colorado. The documents include an analysis of the environmental effects that could result from implementing the alternatives addressed in the RMP. The Proposed RMP (PRMP) is a refinement of the preferred alternative (Alternative B) from the Draft RMP, released on January 25, 2013. Public comments were taken into account in the PRMP, corrections were made where necessary, and parts were reworded for clarification. The PRMP will be published in late 2014.

The purpose of this biological assessment (BA) is to review the PRMP to determine the extent that its implementation may affect threatened and endangered (T&E) species. Because the RMP is a planning document, this BA focuses on the effect of management actions to be implemented.

Under provisions of the US Endangered Species Act (ESA) of 1973, as amended (16 USC, Section 1531, et seq.), federal agencies are directed to conserve T&E species and their habitats. Section 7(a)(1) states that all federal agencies shall "utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species…." Thus, the conservation and recovery of T&E species is not simply the responsibility of the US Fish and Wildlife Service (USFWS), but of all federal agencies. To meet this requirement, the GJFO would implement protective stipulations, conditions of approval, conservation measures, best management practices (BMPs), mitigation, and habitat restoration. It also would implement protections afforded through the Area of Critical Environmental Concern (ACEC) designations for federally listed species.

Section 7(c) of the ESA requires the BLM to complete a BA to determine the effects of implementing the RMP on listed species. Section 7(c) of the ESA is based on compliance with Section 102 of the National Environmental Policy Act (NEPA). Federal agencies are required to consider, avoid, or prevent adverse impacts on fish and wildlife. Federal agencies are also required to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of T&E species or their critical habitat.

The ESA requires action agencies, such as the BLM, to consult or confer with the USFWS when there is discretionary federal involvement or control over the action. The ESA also requires agencies to ensure that resources are afforded adequate consideration and protection. Informal consultation occurs when the federal agency, after discussion with the USFWS, determines that the proposed action is not likely to affect any listed species in the action area, and the USFWS concurs. Formal consultation occurs after the agency determines that the proposed action is likely to adversely affect listed species or critical habitat, or when the aforementioned federal agencies do not concur with the action agency's finding (USFWS 1998a).

This BA provides documentation and analysis for the proposed action to meet the federal requirements and agreements set forth by the federal agencies. It addresses federally listed T&E species; it has been prepared under the 1973 ESA Section 7 regulations, in accordance with the 1998 procedures set forth by the USFWS and the National Marine Fisheries Service. Site-specific evaluations would be conducted for activities authorized under the RMP; the BLM would consult or confer with the USFWS for those activities that may affect T&E or proposed species. In addition, the BLM would evaluate site-specific activities that may affect BLM Colorado sensitive species, in compliance with BLM Manual 6840 (BLM 2008c).

The BLM requests informal consultation and concurrence for the effects of the PRMP on seven threatened, endangered, and proposed species in **Table 1-1**, List of Threatened, Endangered, and Proposed Species Addressed in Grand Junction Field Office RMP Biological Assessment. Formal consultation is requested for the Colorado hookless cactus, DeBeque phacelia, Colorado pikeminnow, razorback sucker, bonytail, humpback chub, and Gunnison Sage-Grouse due to the "may affect, likely to adversely affect" determination for these species and their habitat (DeBeque phacelia, and the Big River Fishes).

1.2 SPECIES ADDRESSED

The species addressed in the PRMP and in this BA include all listed T&E species that are known to occur or have suitable habitat within the GJFO planning area. Also included are those species that have been proposed or are candidates for listing under the ESA and could occur in the planning area (**Table 1-1**).

Table 1-1
List of Threatened, Endangered, and Proposed Species Addressed in Grand Junction Field Office RMP Biological Assessment

Common Name	Species Name	Federal Status[1]
Listed Species for Potential Consultation		
Plants		
Colorado hookless cactus	*Sclerocactus glaucus*	T
DeBeque phacelia	*Phacelia submutica*	T
Parachute penstemon	*Penstemon debilis*	T
Ute ladies'-tresses	*Spiranthes diluvialis*	T
Fish		
Colorado pikeminnow	*Ptychocheilus lucius*	E
Greenback cutthroat trout	*Oncorhynchus clarki stomias*	T
Razorback sucker	*Xyrauchen texanus*	E
Bonytail	*Gila elegans*	E
Humpback chub	*Gila cypha*	E
Birds		
Mexican spotted owl	*Strix occidentalis lucida*	T
Greater sage-grouse	*Centrocercus urophasianus*	C
Gunnison sage-grouse[2]	*Centrocercus minimus*	P
Western yellow-billed cuckoo[2]	*Coccyzus americanus*	T
Mammals		
Canada lynx	*Lynx canadensis*	T

Source: USFWS 2012a
[1]Status: E = Endangered; T = Threatened; P = Proposed for listing; C = Candidate for listing
[2]Critical habitat proposed

1.3 CONSULTATION HISTORY

The GJFO RMP/EIS will replace the 1987 Grand Junction RMP, as amended, (BLM 1987). Section 7 consultation was not completed for the previous RMP. The BLM has completed approximately 50 maintenance actions and 12 RMP amendments since the 1987 Record of Decisions was signed. Additionally, since completion of the 1987 Grand Junction RMP, several programmatic and project-specific consultations have been completed for activities in the planning area. The USFWS has been a cooperating agency on the GJFO RMP since the revision began in 2008.

1.3.1 Big River Fishes

In November 2008, The BLM prepared two Programmatic BAs for the four big river fishes (i.e., Colorado pikeminnow, bonytail, humpback chub, or razorback sucker). One BA addressed water depletions associated with the fluid mineral program in western Colorado, as administered by the BLM Colorado (BLM 2008b), and the other addressed all other water depleting BLM programs (BLM 2008a). After initiation of consultation, the USFWS issued two programmatic biological opinions (BOs) (USFWS 2008; 2009a). Both BOs found that water depleting activities were likely to adversely affect the four listed fish species and

their critical habitats. This consultation is valid until the following factors trigger the need for a reassessment:

- Any newly proposed critical habitat.
- New and relevant information regarding any of the four listed fishes or their habitats.
- Impacts not previously considered.
- Major changes in the Fluid Mineral Program (e.g., new or revised reasonably foreseeable developments, if higher than anticipated) or the program's implementation.

No reassessment factors have occurred since the USFWS issued the BOs. Therefore, this consultation remains valid.

1.3.2 Livestock Grazing

In 2012 the BLM prepared a BA (BLM 2012a) and an amendment containing revised conservation measures (BLM 2012b). The BA assessed the effects of the BLM's livestock grazing program on Colorado hookless cactus, clay-loving wild buckwheat, and *DeBeque phacelia* in the Uncompahgre, Grand Junction, and Colorado River Valley Field Offices. This BA determined that livestock grazing permitted by the BLM is likely to adversely affect these three listed species. The USFWS issued a programmatic BO for this consultation on November 15, 2012 (USFWS 2012b).

1.3.3 Integrated Weed Management Plan

On June 11, 2010, the BLM GJFO completed a BA which addressed the effects of integrated weed management on federally listed species including the Colorado hookless cactus, Canada lynx, greenback cutthroat trout, and four endangered Colorado River fishes and their designated critical habitat. An amended BA (July 12, 2010) requested conferencing on the impacts on the species proposed for Federal listing at the time: Parachute penstemon and DeBeque phacelia (BLM 2010b).

On July 27, 2010, the USFWS concurred with the BLM's determination that the Integrated Weed Management Plan may affect, but is not likely to adversely affect the Colorado hookless cactus, Canada lynx, greenback cutthroat trout, the four endangered Colorado River fishes (i.e., Colorado pikeminnow, razorback sucker, bonytail, and humpback chub), and their designated critical habitat. The USFWS also concurred with the BLM's determination that the Integrated Weed Management Plan may affect, but is not likely to adversely affect the two species proposed for federal listing at the time: the Parachute penstemon and the DeBeque phacelia. This BA tiers to the Programmatic Integrated Weed Management Plan BO. In 2014 the conference opinion for DeBeque phacelia and Parachute penstemon and their Critical Habitat was rolled into the consultation.

1.4 PURPOSE OF AND NEED FOR THE RMP/EIS

The purpose of this RMP revision is to ensure that public lands are managed in accordance with the intent of Congress, as stated in the Federal Land Management and Policy Act of 1976 (FLPMA), under the principles of multiple use and sustained yield. This will be accomplished by establishing desired goals, objectives, allowable uses, and management actions needed to achieve the desired conditions for resources and resource uses. The RMP incorporates new data, addresses land use issues and conflicts, specifies where and under what circumstances particular activities would be allowed on BLM-administered lands, and incorporates the mandate of multiple uses in accordance with the FLPMA. The RMP does not describe how particular programs or projects would be implemented or prioritized; rather, those decisions are deferred to more detailed implementation-level planning.

The FLPMA requires that the BLM "develop, maintain, and, when appropriate, revise land use plans" (43 USC 1712 [a]). The BLM-administered lands within the GJFO planning area are currently managed in accordance with the decisions in the 1987 Grand Junction RMP (BLM 1987). The BLM has completed approximately 50 maintenance actions and 12 RMP amendments since the 1987 Record of Decision was signed. There is a need to revise the GJFO RMP due to new issues that have arisen since the original plan was prepared. Major issues contributing to the RMP revision include the following (additional planning issues identified for this plan are outlined in Section 1.6.1 of the PRMP:

- Management of BLM-administered land to support numerous wildlife species and their habitats
- Management of BLM-administered lands containing both wilderness character and oil and gas potential, including areas not designated as Wilderness Study Areas (WSAs)
- Management of energy and mineral resources, including identifying areas and conditions in which mineral development can occur
- Management of increased visitation by way of off-highway vehicle (OHV) use and nonmotorized uses (e.g., mountain biking and hiking) that have led to increased concerns regarding resource protection and conflicting uses
- Completion of Wild and Scenic River (WSR) eligibility and suitability studies on river segments within the GJFO planning area
- Consideration of opportunities for land tenure adjustment to improve public land manageability
- Expansion of communities and the urban interface
- Consideration of right-of-way (ROW) exclusion areas and corridors
- The needs of local government and citizens to be heard on an array of issues regarding both traditional and emerging uses of BLM-

administered land and their potential social and economic effects on local communities and values

In addition, new resource assessments and scientific information is available to help the GJFO in revising previous decisions. Specifically, there may be a need to evaluate management prescriptions and resource allocations to address the increase in uses and demands on BLM-administered lands (such as natural gas development and recreation), as well as the interest in protecting natural and cultural resources. There is also the need to revise the RMP to allow for updated BLM management direction, guidance, and policy. Land use plan decisions may be changed only through the amendment or revision process

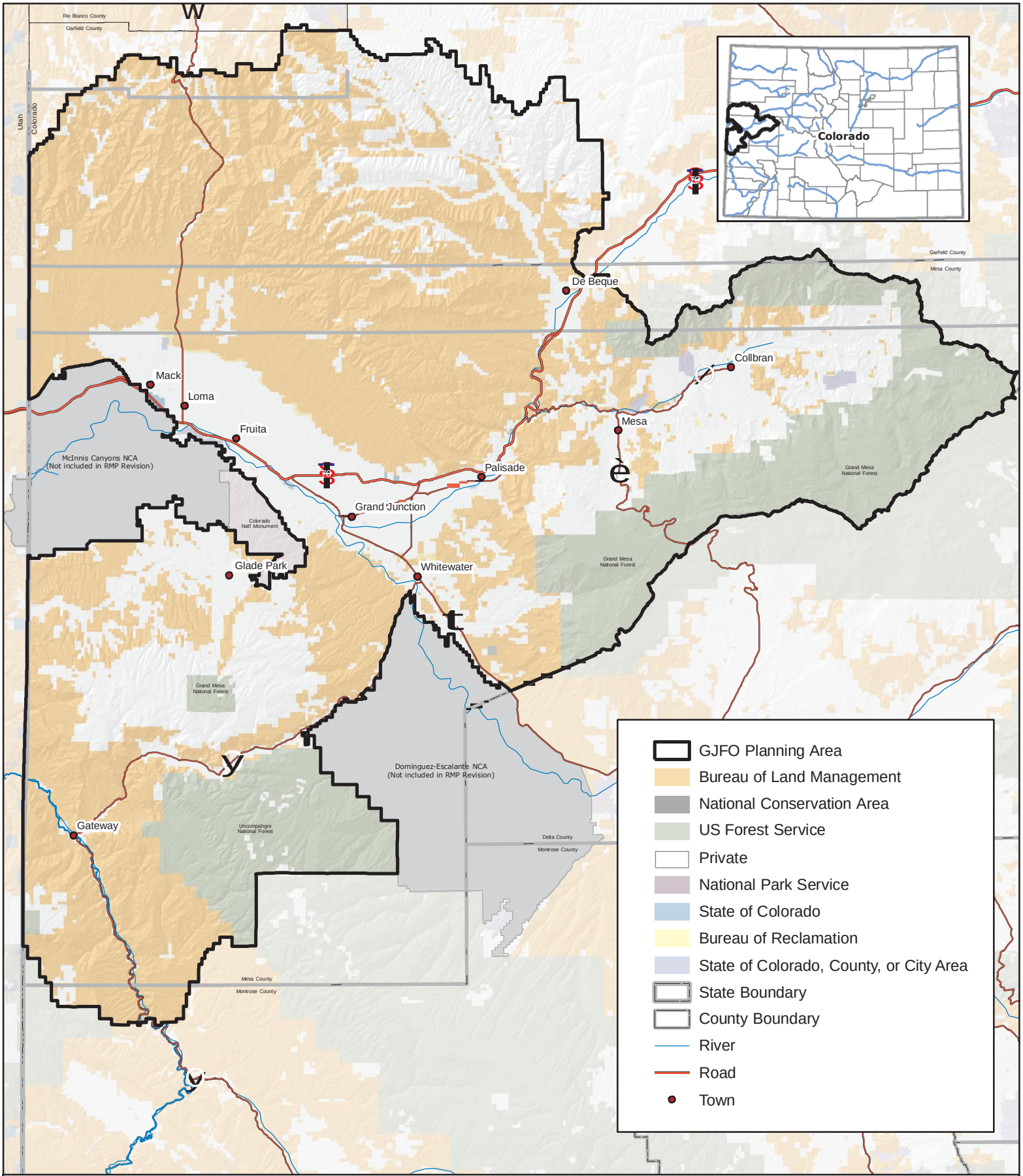
1.5 DESCRIPTION OF THE PLANNING AREA AND DECISION AREA

The GJFO planning area is composed of BLM; US Department of Agriculture (USDA), Forest Service (US Forest Service); US Department of the Interior, Bureau of Reclamation; and State of Colorado lands (**Table 1-2**, Land Status within the GJFO Planning Area) in Garfield, Mesa, Montrose, and Rio Blanco Counties in western Colorado. There are nearly 1.1 million acres of BLM-administered lands and 1.2 million acres of federal mineral estate in the planning area. The McInnis Canyons and Dominguez-Escalante National Conservation Areas (NCAs), while managed by the BLM and within the GJFO boundary, are or will be managed under separate RMPs. As such, these NCAs are not within the GJFO RMP decision area and are not part of this planning effort, with the exception of the portion of the Colorado River within the McInnis Canyons NCA that is being studied under the WSR Suitability Report. This is because the Colorado River is not part of the McInnis Canyons NCA (Public Law 106-353). If the segment is found suitable for inclusion in the National Wild and Scenic Rivers System, a separate activity-level plan will be prepared to provide for the management of the river as suitable. In addition, the Colorado National Monument, managed by the National Park Service, is within the GJFO boundary but is not included in the planning area or this RMP effort. A map of the planning area is provided as **Figure 1-1**, Project Planning Area.

Table 1-2
Land Status within the GJFO Planning Area

Land Status	Acres	Percentage of Planning Area
BLM	1,061,400	50
US Bureau of Reclamation	7,900	less than 1
Local (State, County, and City)	3,400	less than 1
Private	714,100	30
State Wildlife Areas and State Recreation Areas (Colorado Parks and Wildlife [CPW])	1,400	less than 1
US Forest Service	380,000	20
Other	370	less than 1
Total	**2,168,600**	**100**

Source: BLM 2010a



Source: BLM 2010a

Project Planning Area

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This project way developed through digital means and may be updated without notice. Map produced by Grand Junction Field Office, Bureau of Land Management, Grand Junction, CO.

0 2.5 5 10 15 20

Miles

Figure 1-1

The decision area for the RMP revision—those lands on which the RMP will make decisions—is composed of GJFO BLM-administered lands within the planning area (**Table 1-2**, Land Status within the GJFO Planning Area). Management direction and actions outlined in the RMP apply only to these BLM-administered lands in the planning area and to federal mineral estate under BLM jurisdiction that may lie beneath other surface ownership. Federal mineral estate under BLM jurisdiction is composed of mineral estate underlying BLM-administered lands, privately owned lands, and state-owned lands (**Table 1-3**, Mineral Status within the GJFO Planning Area by County). As such, federal mineral estate acres are greater than BLM-administered surface acres. No specific measures have been developed for private, state, or other federal lands, but given that these lands are interspersed with BLM-administered lands, they could be influenced or be indirectly affected by BLM management actions. BLM management authority on lands with a split estate (e.g., private surface but federal minerals) is limited to activities (both surface and subsurface) related to exploration and development of the minerals. The BLM adopts the leasing requirements determined by other surface-managing agencies when leasing the mineral estate under those lands with a split estate. National Forest System lands would have leasing decisions made in the appropriate US Forest Service Land and Resource Management Plan/EIS. In its plans, the US Forest Service analyzes impacts from oil and gas leasing and development on National Forest System Lands and describes where the US Forest Service will or will not consent to leasing.

Table 1-3
Mineral Status within the GJFO Planning Area by County

Land Status (acres)	Garfield County	Mesa County	Montrose County	Rio Blanco County	Total
BLM/Federal Minerals	322,600	721,700	17,100	0	1,061,400
Private Surface/Federal Minerals	33,300	132,700	200	400	166,600
State Surface/Federal Minerals	0	1,200	0	0	1,200
Local Surface/Federal Minerals	0	2,100	0	0	2,100

Source: BLM 2010a

SECTION 2
PROPOSED ACTION

2.1 PROPOSED RMP

The Proposed RMP (PRMP; the proposed action) is hereby incorporated by reference and summarized in this section. It would provide direction for managing the nearly 1.1 million acres of BLM-administered lands and 1.2 million acres of federal mineral estate within the GJFO planning area. This chapter details the PRMP; **Table 2-1**, Proposed Resource Management Plan—Goals, Objectives, and Management Actions by Resource and Resource Use, describes the goals, objectives, and actions of the PRMP which are relevant to the protection of biological resources. The full list of stipulations and BMPs in the Proposed RMP for other resource and resource use programs are included as appendices to this BA, and may provide additional protection to threatened, endangered, proposed and candidate species. For a complete summary of the goals, objectives, and management actions refer to Chapter 2 of the PRMP.

Table 2-1
Proposed Resource Management Plan—Goals, Objectives, and Actions by Resource and Resource Use

Special Status Species
General
GOAL: Manage special status species habitats to provide for their conservation and restoration as part of an ecologically healthy system.
Objective (SSS-O1): Maintain or improve the quality of listed (i.e., threatened or endangered) and sensitive species habitat by managing public land activities to support species recovery and the benefit of those species.
Allowable Use (SSS-AU1): **STIPULATION** CSU-9: *BLM Sensitive Plant Species Occupied Habitat.* For plant species listed as sensitive by BLM, special design, construction, and implementation measures within a 100-meter (328 feet) buffer from the edge of occupied habitat may be required. In addition,

Table 2-1
Proposed Resource Management Plan—Goals, Objectives, and Actions by Resource and Resource Use

relocation of operations by more than 200 meters (656 feet) may be required. Standard exceptions apply.

Allowable Use (SSS-AU2):

STIPULATION CSU-10: *Wildlife Habitat.*

Require proponents of surface-disturbing activities to implement specific measures to mitigate impacts of operations on wildlife and wildlife habitat within high-value or essential wildlife habitat. Measures would be determined through biological surveys, onsite inspections, effects of previous actions in the area, and BMPs. Standard exceptions apply.

Allowable Use (SSS-AU3):

LEASE NOTICE LN-3: *Biological Inventories.* The operator is required to conduct a biological inventory prior to approval of operations in areas of known or suspected habitat of special status species, or habitat of other species of interest such as but not limited to raptor nests, Sage-Grouse leks, or significant natural plant communities. The operator, in coordination with the BLM, shall use the inventory to prepare mitigating measures to reduce the impacts on affected species or their habitats. These mitigating measures may include, but are not limited to, relocation of roads and other facilities and fencing operations or habitat. Where impacts cannot be mitigated to the satisfaction of the BLM's Authorized Officer, surface occupancy on that area is prohibited.

Special Status Species: Fish

Objective(SSS-F-O1):

Maintain or improve the quality of listed (threatened or endangered) fish and sensitive fish habitat by managing public land activities to support species recovery and the benefit of those species.

Implementation Action (SSS-F-A1):

Identify limiting habitat factors based on site characteristics and habitat capabilities using channel type and geology classifications (e.g., Rosgen). Upon identification of limiting factors, prioritize and implement proven river, stream, lake, and riparian practices (e.g., in-channel habitat structures to create pools, riparian plantings) or by changing management of other program activities (e.g., changing livestock grazing season use) to achieve desired future condition.

Action (SSS-F-A2):

Designate the following ACECs to protect habitat for unique, sensitive, and listed fish (see ACECs section for management prescriptions):

- Dolores River Riparian ACEC: flannelmouth *(Catostomus latipinnis)* and bluehead sucker *(Catostomus discobolus)*; and
- Roan and Carr Creeks: green lineage cutthroat trout *(Oncorhynchus clarkii)*.

Implementation Action (SSS-F-A3):

While maintaining desired levels of access, identify and reroute or close and rehabilitate redundant, duplicative, or poorly constructed routes to reduce point sources of erosion and resulting sedimentation and turbidity impacts within watersheds containing known Colorado River and green lineage cutthroat trout populations. Focus on routes within closest proximity to occupied streams.

Allowable Use (SSS-F-AU1):

STIPULATION TL-1: *Salmonid and Native, Non-Salmonid Fishes.*

Prohibit in-channel stream work in all occupied streams during fish spawning, egg incubation, and fry emerging seasons. Fish spawning, egg incubation, and fry emerging seasons vary by elevation and temperatures; however the following intervals generally apply in Colorado:

Table 2-1
Proposed Resource Management Plan—Goals, Objectives, and Actions by Resource and Resource Use

- Cutthroat trout (various subspecies): May 1-September 1
- Rainbow trout: March 1-June 15
- Brown trout: October 1-May 1
- Brook trout: August 15-May 1
- Sculpin: May 1-July 31
- Bluehead sucker: May 1-July 15
- Flannelmouth sucker: April 1-July 1
- Roundtail chub: May 15-July 15
- Speckled dace: May 1-August 31
- Mountain whitefish: October 1-November 30

Exception Criteria: This stipulation only applies to construction and drilling and does not apply to operations and maintenance. If competing species are involved, the BLM may select to implement species-specific dates for native fish versus nonnative species. Specific exceptions apply.

Allowable use (SSS-F-AU5):
STIPULATION *CO-NSO-Hydrology River:*
No surface occupancy or use is allowed within 400 meters (1312 feet) of the ordinary high-water mark (bank-full stage) or within 100 meters (328 feet) of the 100-year floodplain (whichever area is greatest) on the following major river: Colorado, Dolores, and Gunnison. Standard exceptions apply.

Allowable Use (SSS-F-AU7):
STIPULATION NSO-2: *Streams/Springs Possessing Lotic Riparian Characteristics.*
Prohibit surface occupancy and surface disturbing activities with a minimum distance of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage). Where the riparian corridor width is greater than 100 meters (328 feet) from bank-full, prohibit surface occupancy and surface disturbing activities within the riparian zone. Standard and special exceptions apply.

Allowable Use (SSS-F-AU9):
Manage the Roan and Carr Creeks ACEC as a ROW avoidance area to protect special status fish species' habitat.

Special Status Species: Plants and Terrestrial Wildlife

GOAL (SSS-PTW-G1):
Manage special status species and their habitats to provide for their conservation and restoration as part of an ecologically healthy system, and support the goals contained in Standard 4 of the Colorado Standards for Public Land Health (BLM 1997).

Objective (SSS-PTW-O1):
To conserve plants and animals (and their habitats) listed by federal and Colorado governments as threatened, endangered, sensitive or species of concern, and to conserve plants and animals that are candidates for these lists with the overall objective of improving their populations so that they can be removed from these lists.

Action (SSS-PTW-A1):
Manage threatened and endangered species' habitat as ROW avoidance areas. Relocate ROWs if a determination is made that the relocation action would benefit and promote recovery and would not further impact a threatened and endangered species.

Table 2-1
Proposed Resource Management Plan—Goals, Objectives, and Actions by Resource and Resource Use

Action (SSS-PTW-A2):

Avoid authorizing 2920 permits (such as site facilities and commercial filming) within known threatened and endangered species' habitat. Allow permits only when there are shown to be no effects on threatened and endangered species habitat.

Allowable Use (SSS-PTW-AU1):

Manage the following ACECs as ROW exclusion areas to protect threatened and endangered species' habitat:

- Atwell Gulch (except for ROWs to existing oil and gas leases issues under the 1987 RMP without NSO lease stipulations);
- Pyramid Rock; and
- South Shale Ridge (except for ROWs to existing oil and gas leases issues under the 1987 RMP without NSO lease stipulations).

Action (SSS-PTW-A3):

Protect and maintain unique ecological values for the following habitat locations to improve the habitat for unique, sensitive, threatened, and endangered plants and animals.

- Atwell Gulch ACEC: Colorado hookless cactus, DeBeque milkvetch, and Naturita milkvetch *(Astragalus naturitensis)*;
- Badger Wash ACEC: grand buckwheat, Ferron's milkvetch, cliffdweller's cryptantha, and Gardner's saltbrush/salina wildrye;
- Dolores River Riparian ACEC: peregrine falcon *(Falco peregrinus),* bald eagle, Kachina daisy *(Erigeron kachinensis)*, Eastwood's monkeyflower, *(Mimulus eastwoodiae)*, San Rafael milkvetch, Dolores River skeleton plant, horseshoe milkvetch, Grand Junction milkvetch, and Gypsum catseye *(Cryptantha crassipes);*
- Juanita Arch ACEC: Grand Junction milkvetch;
- The Palisade ACEC: peregrine falcon, bald eagle, Dolores River skeleton plant, San Rafael milkvetch, horseshoe milkvetch, Fisher Tower's milkvetch, tufted green gentian, and Osterhout's catseye;
- Pyramid Rock ACEC: Colorado hookless cactus, DeBeque phacelia, DeBeque milkvetch, Naturita milkvetch, adobe thistle, and aromatic Indian breadroot;
- Rough Canyon ACEC: canyon treefrog, Gunnison Sage-Grouse, Grand Junction milkvetch, and Eastwood's desert parsley;
- Sinbad Valley ACEC: Gypsum catseye;
- South Shale Ridge ACEC: Colorado hookless cactus, DeBeque phacelia, Naturita milkvetch, and adobe thistle; and
- Unaweep Seep ACEC: Great Basin silverspot butterfly and giant helleborine.

Action (SSS-PTW-A4):

Pursue land tenure adjustments to facilitate the conservation or recovery of special status species. Avoid the disposal of occupied special status species' habitat.

Allowable Use (SSS-PTW-AU3):

LEASE NOTICE LN-4 *Threatened and Endangered Species.* This lease contains habitat for threatened and endangered species. Prior to undertaking any activity on the lease, including surveying and staking of well locations, the lessee may be required to perform botanical inventories on the lease. Special design and construction measures may also be required in order to minimize impacts on threatened and endangered species habitat from drilling and producing operations.

Table 2-1
Proposed Resource Management Plan—Goals, Objectives, and Actions by Resource and Resource Use

Plants
Objective (SSS-P-O1): Promote maintenance and recovery of federally listed, proposed, and candidate plant species by protecting occupied habitat. Protect occupied habitat for all BLM sensitive plant species and significant plant communities as defined and tracked by CNHP.
Implementation Action (SSS-P-A1): Identify the following areas as core conservation populations for special status plant species: • Atwell Gulch; • Logan Wash Mine; • Pyramid Rock ACEC; • South Shale Ridge; • Sunnyside; and • Reeder Mesa. Manage identified habitat to maintain the population. Management tools include but are not limited to weed treatments, inter-seeding, route closures, fencing, and managing timing and intensity of grazing. Identify additional areas as populations are identified and species of concern are modified. Limit new road construction in Reeder Mesa, Sunnyside, Logan Wash Mine, and South Shale Ridge, and designate new roads associated with authorized uses as administrative (e.g., oil and gas and ROWs). Rehab and close roads associated with authorized uses when no longer needed.
Implementation Action (SSS-P-A2): Monitor special status plant populations to determine trends, impacts, and guide future management, with an emphasis on areas near surface-disturbing activities. Utilize monitoring data to determine and modify NSO stipulations applicable to current and historically occupied habitat of threatened, endangered, proposed, and candidate plants.
Implementation Action (SSS-P-A3): Reduce redundancies in routes to minimize habitat fragmentation, and minimize direct impacts on listed plant species habitat, and occupied habitat from motorized and mechanized users of roads, routes and trails. Identify mitigation where open routes are negatively effecting designated critical habitat.
Implementation Action (SSS-P-A4): Reduce as much as practicable route density (miles/square mile) within 200 meters of known Threatened and Endangered plant occurrences throughout the field office. If occurrences are identified in the future that conflict with route designations, implement reroutes.
Allowable Use (SSS-P-AU1): **STIPULATION** NSO-12: *ACECs.* Prohibit surface occupancy and surface-disturbing activities in the following ACECs to protect threatened, proposed, candidate, and sensitive plants. Standard exceptions apply. • Atwell Gulch (threatened and sensitive plants); • Badger Wash (sensitive plants); • Pyramid Rock (threatened and sensitive plants); • South Shale Ridge (threatened and sensitive plants); and • Unaweep Seep (sensitive plants).

Table 2-1
Proposed Resource Management Plan—Goals, Objectives, and Actions by Resource and Resource Use

Allowable Use (SSS-P-AU2):

STIPULATION NSO-13: *Current and Historically Occupied and Critical Habitat of Threatened, Endangered, Proposed, and Candidate Plant and Animal Species.*

Prohibit certain surface uses (as specified in Appendix B of the RMP), to protect threatened, endangered, proposed, and candidate plants and animals from indirect impacts, loss of immediately adjacent suitable habitat, or impacts on primary constituent elements of critical habitat as designated by USFWS. Maintain existing buffer distances where pre-existing disturbance exists, and reduce redundancies in roads to minimize fragmentation, and minimize direct impacts from motorized and mechanized users of roads, routes and trails. In undisturbed environments and ACECs, prohibit new disturbance within 200 meters (656 feet) of current and historically occupied and suitable habitat. This stipulation includes emergency closures of roads where damage to T&E habitat has occurred.

Allowable Use (SSS-P-AU7):

STIPULATION *CO-CSU-Plant Community.*

Surface occupancy or use may be restricted within occupied habitat that meets BLM's criteria, as established in the Resource Management Plan, for significant and/or relict plant communities:

- all old growth forests and woodlands and
- plant communities that meet BLM's criteria for significant plant communities

Special design, construction and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. Prior to authorizing activities in this area, the operator may be required to submit a plan of development that would demonstrate that habitat would be preserved to maintain the viability of significant or relict plant communities.

Yellow-billed Cuckoo

Objective (SSS-Y-O1):

Maintain and improve BLM lands for yellow-billed cuckoo habitat.

Action (SSS-Y-A1):

Where large stands of cottonwoods occur, develop management plans to restore or improve cuckoo habitat and increase canopy cover and mid-story tree and shrub cover.

Allowable use (SSS-Y-AU2):

STIPULATION *CO-NSO-Hydrology River:*

No surface occupancy or use is allowed within 400 meters (1312 feet) of the ordinary high-water mark (bank-full stage) or within 100 meters (328 feet) of the 100-year floodplain (whichever area is greatest) on the following major rivers: Colorado, Dolores, and Gunnison**.** Standard exceptions apply.

Allowable Use (SSS-Y-AU4):

STIPULATION NSO-2: *Streams/Springs Possessing Lotic Riparian Characteristics.*

Prohibit surface occupancy and surface disturbing activities with a minimum distance of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage). Where the riparian corridor width is greater than 100 meters (328 feet) from bank-full, prohibit surface occupancy and surface disturbing activities within the riparian zone. Standard and special exceptions apply.

Gunnison and Greater Sage-Grouse

Objective (SSS-SG-O1):

Advance the conservation of Gunnison and Greater Sage-Grouse and their habitat in accordance with current national, state, and local working group recommendations and policy as well as the most current scientific literature and research.

Table 2-1
Proposed Resource Management Plan—Goals, Objectives, and Actions by Resource and Resource Use

Implementation Action (SSS-SG-A1):

Consistent with current guidance for sagebrush-dependent species, improve areas of poor quality nesting habitat by implementing the following actions, including but not limited to:

- In areas where species diversity is low seed area with grasses and forbs, with an emphasis on forbs if brood-rearing occurs in the area, accompanied by light disking and interseeding, or drill seeding.
- Where sage is decadent and does not meet habitat objectives, conduct thinning by roller-chopping, light disking, Dixie Harrow, Lawson Aerator or other methods.
- Conduct vegetation treatments to retain residual cover through fall and winter into nesting season.

Implementation Action (SSS-SG-A2):

When reseeding roads, primitive roads and trails, use appropriate seed mixes (appropriate for Sage-Grouse ecological conditions) and consider the use of transplanted sagebrush.

Implementation Action (SSS-SG-A3):

Reduce routes through currently suitable or potentially suitable Gunnison and greater sage grouse habitat by reducing routes through sage brush parks, with an emphasis on routes that bisect sage brush parks.

Implementation Action (SSS-SG-A4):

Improve brood-rearing habitats by implementing the following action:

- Restore old ponds or construct new ponds in areas lacking water, while minimizing potential for promoting mosquito breeding habitat at elevations below 8,000 feet.

Implementation Action (SSS-SG-A5):

Improve lek areas by mechanically treating historic lek areas where sagebrush density has increased.

Implementation Action (SSS-SG-A6):

To reduce disturbance to Gunnison or Greater Sage-Grouse, close duplicative or redundant routes within Sage-Grouse habitat and within 4 miles of a lek.

Implementation Action (SSS-SG-A7):

Remove/modify raptor perches, in Gunnison and Greater Sage-Grouse habitat (trees, fences, dry-hole markers, and power poles).

Implementation Action (SSS-SG-A8):

Monitor measureable objectives and evaluate grazing management to assure that management actions are achieving Sage-Grouse habitat objectives.

Implementation Action (SSS-SG-A9):

Design any new structural range improvements to conserve, enhance, or restore Sage-Grouse habitat through an improved grazing management system relative to Sage-Grouse objectives. Structural range improvements, in this context, include but are not limited to: cattleguards, fences, enclosures, corrals or other livestock handling structures; pipelines, troughs, storage tanks (including moveable tanks used in livestock water hauling), windmills, ponds/reservoirs, solar panels and spring developments.

Action (SSS-SG-A10):

To reduce Sage-Grouse strikes and mortality, remove, modify, or mark fences in high risk areas. When fences are necessary, require a Sage-Grouse-safe design.

Action (SSS-SG-A11):

Locate supplements (salt or protein blocks) in a manner designed to conserve, enhance, or restore Sage-Grouse habitat.

Action (SSS-SG-A12):

Offer temporary use on a case-by-case basis in allotments where grazing preference has been relinquished, or non-use warrants to rest other allotments that include important Sage-Grouse habitat.

Table 2-1
Proposed Resource Management Plan—Goals, Objectives, and Actions by Resource and Resource Use

Action (SSS-SG-A13):
Apply TL-16 (Occupied Sage-Grouse Winter Habitat) or TL-17 (Sage-Grouse Leks) to vegetation management treatments according to the type of seasonal habitats present in a priority area.

Implementation Action (SSS-SG-A14):
Monitor after vegetation treatments for success in meeting objectives and monitor and control invasive vegetation after vegetation treatments in Sage-Grouse habitat.

Action (SSS-SG-A15):
Apply post-vegetation treatment management and monitoring to ensure long term persistence of seeded native plants. Outline temporary or long-term changes in livestock grazing, wild horse and burro, and travel management, etc., to achieve and maintain vegetation management objectives to benefit Sage-Grouse and their habitats.

Action (SSS-SG-A16):
Design vegetation treatments in Sage-Grouse habitats to strategically reduce wildfire threats in the greatest area. This may involve spatially arranging new vegetation treatments with past treatments, vegetation with fire-resistant seral stages, natural barriers, and roads in order to constrain fire spread and growth. This may require vegetation treatments to be implemented in a more linear versus block design.

Action (SSS-SG-A17):
Include Sage-Grouse habitat parameters as defined by Connelly et al. (2000), Hagen et al. (2007) or if available, state and federal Sage-Grouse conservation and recovery plans and appropriate local information in habitat restoration objectives. Make maintaining these objectives within priority Sage-Grouse habitat areas a high restoration priority.

Action (SSS-SG-A18):
Choose native plant seeds for vegetation treatments based on availability, adaptation (site potential), probability for success, and the vegetation management objectives for the area covered by the treatment. Where probability of success or native seed availability is low, use species that meet soil stability and hydrologic function objectives as well as vegetation and Sage-Grouse habitat objectives.

Action (SSS-SG-A19):
Manage the following areas to benefit Sage-Grouse habitat:
- Wildlife Emphasis Areas:
  - Glade Park and
  - Sunnyside.
- ACECs:
  - Roan and Carr Creek

Allowable use (SSS-SG-AU2):
Identify the following as ROW avoidance areas:
- Sage-Grouse occupied habitat and
- Within a 4-mile radius of Sage-Grouse leks.

Allowable Use (SSS-SG-AU3):
No Leasing: *Sage-Grouse.*
Close all occupied Gunnison Sage-Grouse habitat (currently 10,600 acres) and Greater Sage Grouse habitat within one mile of an active lek to fluid mineral leasing and geophysical exploration.

Allowable Use (SSS-SG-AU4):
No Leasing: *Split-estate.*
Manage 12,200 acres of Private and State surface/federal fluid mineral estate in all occupied Gunnison Sage-Grouse habitat and Greater Sage Grouse habitat within one mile of an active lek as closed to fluid

Table 2-1
Proposed Resource Management Plan—Goals, Objectives, and Actions by Resource and Resource Use

mineral leasing and geophysical exploration.
Allowable Use (SSS-SG-AU5): **STIPULATION** TL-16: *Occupied Sage-Grouse Winter Habitat.* Prohibit surface occupancy and surface-disturbing activities in occupied Sage-Grouse winter habitat from December 16 to March 15.
Allowable Use (SSS-SG-AU6): **STIPULATION** NSO-25: *Sage-Grouse Leks, Nesting, and Early Brood-rearing Habitat.* Prohibit surface occupancy and surface-disturbing activities within 4 miles of an active lek or within Sage-Grouse nesting and early brood-rearing habitat. Standard and special exceptions apply.
Allowable Use (SSS-SG-AU8): **STIPULATION** TL-17: Sage-Grouse Leks. Prohibit surface occupancy and surface-disturbing activities within 4 miles of Sage-Grouse leks from March 1 to June 30. Standard and special exceptions apply.
Mexican Spotted Owl
GOAL (VFW-G2): Maintain forests and woodlands for a healthy mix of successional stages within the natural range of variation that incorporates diverse structure and composition.
Objective (VFW-O2): Manage ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii)*, aspen *(Populus tremuloides)*, and spruce/fir to mimic natural stand conditions and natural regeneration.
Action (VFW-A3): Use prescribed fire and mechanical, chemical, and biological treatments as necessary to reduce the risk of disease vectors and to increase the resilience to beetles and disease.
Objective (VDPC-O9): Emphasize perpetuating late- to mid-seral plant communities that provide suitable habitat for wildlife.
Special Status Species: Canada Lynx
Objective (SSS-CL-O1): Maintain and improve BLM-managed portions of Lynx Analysis Units for Lynx habitat.
Action (SSS-CL-A1): Within lynx *(Lynx canadensis)* habitat in Lynx Analysis Units: • Manage timber harvest consistent with the August 2013 Lynx Conservation Assessment and Strategy and • Limit the expansion of consistent snow compaction unless it serves to consolidate use and improve lynx habitat.

Relevant PRMP appendices are attached to this BA and include **Appendix H**, Best Management Practices and Standard Operating Procedures; and **Appendix B**, Stipulations Applicable to Fluid Mineral Leasing and Other Surface-Disturbing Activities. Relevant Best Management Practices, Standard Operating Procedures, and Stipulations are discussed further in the effects analysis of Chapter 4 in this BA; general context and applicability are discussed below:

BMPs are state-of-the-art mitigation measures applied on a site-specific basis to avoid, minimize, reduce, rectify, or compensate for adverse environmental or social impacts. They are applied to management actions to aid in achieving desired outcomes for safe, environmentally responsible resource development, by preventing, minimizing, or mitigating adverse impacts and reducing conflicts. While BMPs for all resource programs could indirectly benefit listed species by protecting habitat, BMPs for soil resources (page H-6), water resources (page H-9), vegetation (page H-17), and fish and wildlife and special status species (page H-29) would be most likely to benefit listed species because these BMPs are targeted at listed species and/or are more likely to overlap with critical habitat.

Stipulations are mitigation measures which apply to select activities on lands overlying federal mineral estate, which includes mineral estate underlying BLM lands, privately-owned lands, and state-owned lands. Under the PRMP, three types of stipulations could be applied to new fluid mineral leases or other land use authorizations, except for those authorized under the realty program: 1) no surface occupancy (NSO) or other no surface-disturbing activities; 2) controlled surface use (CSU); and 3) timing limitation (TL). ROW authorizations are governed by avoidance and exclusion area restrictions.

> NSO/No Surface-disturbing Activities: Allows fluid mineral leasing, but surface-disturbing activities cannot be conducted on the surface of the land unless an exception, waiver, or modification is granted. Access to fluid mineral deposits would require directional drilling from outside the boundaries of the NSO/No Surface-disturbing Activities areas.
>
> CSU: Allows some use and occupancy of public land, while protecting identified resources or values. A CSU stipulation allows the BLM to require special operational constraints, or the surface-disturbing activity can be shifted more than 200 meters (656 feet) to protect the specified resource or value.
>
> TL: Closes an area to fluid mineral exploration and development, surface-disturbing activities, and intensive human activity during identified time frames. This stipulation does not apply to operation and basic maintenance activities, including associated vehicle travel, unless otherwise specified. Construction, drilling, completions, and other operations considered to be intensive in nature are not allowed.

In addition to those stipulations directed at protecting special status species (see pages B-9, B-13, and B-16), the Proposed RMP includes a broader suite of stipulations that would protect special status species by limiting or prohibiting surface-disturbing activities in areas where these species may occur. These include NSO stipulations that prohibit surface-disturbing activities, CSU stipulations that require site-specific avoidance of sensitive resources, and TL stipulations that seasonally prohibit or limit surface-disturbing activities.

Whether a stipulation is targeted at special status species or a different resource, the resultant reduction in surface-disturbing activities would benefit special status species. Under the Proposed RMP, there would be 647,900 acres of NSO stipulations, 599,300 acres of CSU stipulations, and 526,400 acres of TL stipulations. Note that acreages of NSO, CSU, and TL stipulations may overlap.

The entire stipulations appendix for the Proposed RMP/Final EIS is attached as an appendix to this BA. While all stipulations could indirectly benefit listed species by minimizing surface disturbance, stipulations for water resources (pages B-8 and B-13), soil resources (pages B-8 and B-13), vegetation (pages B-8 and B-13), special status species (pages B-9, B-13, and B-16), fish and wildlife (pages B-10, B-14, and B-17), and ACECs (pages B-11 and B-15) would be most likely to benefit listed species because these stipulations are targeted at listed species and/or are more likely to overlap with critical habitat.

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SECTION 3
EVALUATED SPECIES

3.1 INTRODUCTION

Eleven threatened or endangered species, two proposed threatened or endangered species, and one candidate species for listing are addressed in this BA (see **Table 1-1**). This chapter describes the following for each species:

- Species description
- Life history
- Status and distribution
- Environmental baseline
- Critical habitat
- Threats

The *environmental baseline* is defined by the regulations implementing the ESA (50 CFR, Part 402.02) as the following:

- Past and present impacts of all federal, state, and private actions and other human activities in the action area.
- The anticipated impacts of all proposed state or federal projects in the action area that have already undergone formal or early Section 7 consultation.
- The impact of state or private actions that are contemporaneous with the consultation process.

The *action area* is defined at 50 CFR, Part 402, to mean "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action." For the purposes of this consultation, the action area includes lands administered by the BLM in the GJFO and those areas nearby that could be affected by the proposed action. In the case of water depletions and

the four endangered big river fish, the action area extends downstream for the entire range of each species in the Colorado River.

3.2 LISTED SPECIES

3.2.1 Colorado Hookless Cactus

Species Description

The Colorado hookless cactus was formerly part of a complex of cactus species called the Uinta Basin hookless cactus, with the taxonomic name *Sclerocactus glaucus*. The species ranged from western Colorado and into portions of eastern Utah. A taxonomic review of the species in 2007 determined that *Sclerocactus glaucus* is actually three separate species: *S. glaucus, S. wetlandicus,* and *S. brevispinus* (74 FR, 47112). *S. glaucus* occurs only in western Colorado and has been renamed Colorado hookless cactus. *S. wetlandicus* and *S. brevispinus* occur only in Utah.

The Colorado hookless cactus is barrel-shaped and typically ranges from 1.2 to 4.8 inches (3 to 12 centimeters) tall, with exceptional plants up to 12 inches (30 centimeters) tall. The flowers are usually funnel shaped but sometimes are bell shaped. They usually have pink to violet tepals (USFWS 2010a).

Life History

Populations of Colorado hookless cactus occur primarily on alluvial benches (soils deposited by water) along the Colorado and Gunnison Rivers and their tributaries. It generally occurs on gravelly or rocky surfaces on river terrace deposits, on mesa tops, and along the spines of ridges. Exposures vary, but Colorado hookless cactus is more abundant on south-facing slopes (USFWS 2010a). Soils are usually coarse, gravelly river alluvium above the river floodplains. They usually consist of Mancos shale, with volcanic cobbles and pebbles on the surface.

Elevations range from 3,900 to 6,000 feet (1,400 to 2,000 meters; USFWS 2010a). Associated desert shrubland vegetation is shadscale (*Atriplex confertifolia*), galleta grass (*Pleuraphis jamesii*), black-sage (*Artemisia nova*), and Indian rice grass (*Achnatherum hymenoides*; USFWS 2010a). Populations also exist in big sagebrush- (*Artemisia tridentata*) or greasewood- (*Sarcobatus vermiculatus*) dominated sites and in the transition zone from sagebrush (*Pinus edulis*) to pinyon-juniper (*Juniperus osteosperma*) communities (USFWS 2010a).

Pollinators include the honeybee and native bees in the genera *Eucera*, *Ashmeadiella*, *Heriades*, *Agapostemon*, and *Lasioglossum* (Rechel et al. 1999). Seed dispersal is primarily by means of ants, which are attracted by nutritious seeds which the Colorado hookless cactus produces (Rechel et al. 1999).

Status and Distribution

The Colorado hookless cactus was first listed as a threatened species in 1979 (44 FR 58868) as Uinta Basin hookless cactus (*Sclerocactus glaucus*). On September 15, 2009 (74 FR 47112), the USFWS officially recognized the taxonomic split of this species, as described above. Critical habitat has not been designated.

The Colorado hookless cactus is an endemic plant found in Delta, Montrose, Mesa, and Garfield Counties, Colorado. There are two population centers of Colorado hookless cactus. The first is on alluvial river terraces of the Gunnison River from near the City of Delta to southern Mesa County; the second is on alluvial river terraces and mesa slopes of the Colorado River, Plateau Creek, and Roan Creek drainages in the vicinity of DeBeque, Colorado (USFWS 2010a). The species has been documented at 93 occurrences, totaling approximately 23,000 individuals (CNHP 2014).

Environmental Baseline

Occurrence in the Action Area

Within the planning area, the Colorado hookless cactus occurs primarily near DeBeque (north and south of Interstate 70) and in the Whitewater area. The Denver Botanic Gardens, in collaboration with the BLM, conducts on-going cactus monitoring efforts, including several populations within the action area west of DeBeque and north of Mesa. Monitoring data indicates the species is stable throughout its range (DePrenger-Levin and Kao 2013).

Past and Present Impacts

Threats to the species within the GJFO include habitat degradation as a result of livestock trampling and grazing, nonnative halogeton and cheatgrass encroachment, energy development, recreation, and unauthorized collection. Predation by rabbits and cactus-borer beetle (*Moneilema semipunctatum*) may also be a significant source of mortality (USFWS 2010a).

Critical Habitat

Critical habitat has not been designated for Colorado hookless cactus.

Threats

The primary threats to Colorado hookless cactus are as follows (USFWS 2010a):

- Natural gas exploration and production
- Pipelines, utilities, and other rights-of-way (ROWs)
- Off-highway vehicle activity
- Livestock grazing and trampling
- Herbicides and pesticides

- Hybridization
- Illegal human collection
- Potential water developments
- Climate change

3.2.2 DeBeque Phacelia

Species Description

DeBeque phacelia is a rare annual plant. It is a low-growing, herbaceous, spring annual plant with a tap root. The stems are typically 0.8 to 3 inches (2 to 8 centimeters) long, often branched at the base and mostly lying flat on the ground as a low rosette. Stems are often deep red and more or less hairy. Leaves are similarly hairy, reddish at maturity, egg-shaped or almost rectangular with rounded corners, with bases abruptly tapering to a wedge-shaped point. Leaf margins are smooth or toothed. The tube-shaped flowers are yellowish white, on short stems (USFWS 2014b).

Life History

DeBeque phacelia is a rare annual plant endemic to nearly barren, clay soils derived from the Atwell Gulch and Shire members of the Wasatch Formation in Mesa and Garfield Counties, Colorado. These clay soils are found on moderately steep slopes, benches, and ridge tops adjacent to valley floors of the southern Piceance Basin in Mesa and Garfield Counties, Colorado. All occurrences consist of small patches of plants on uniquely textured, shrink-swell clay soil separated by larger areas of similar-appearing soils that are not occupied by DeBeque phacelia. DeBeque phacelia seeds usually germinate in early April and finish their life cycle by late June to early July after which time they dry up and disintegrate or blow away, leaving no indication that the plants were present (USFWS 2014b). The seed bank is the mechanism by which the populations survive. The seeds can remain dormant for 5 years (and probably longer) until the combination and timing of temperature and precipitation are optimal (USFWS 2011a).

Status and Distribution

The USFWS listed DeBeque phacelia as a threatened species under a final rule published on July 27, 2011 (76 FR 45054). Critical habitat for the species was designated on August 13, 2012 (77 FR 48367). The DeBeque phacelia is endemic to the southern Piceance Basin. Its range encompasses 82,231 acres, and as of 2012, the species occupied a total of 558.6 acres. Plants are found at elevations ranging from 5,000 to 7,150 feet (1,525 to 2,180 meters; USFWS 2013a).

The number of plants varies widely from year to year depending on climatic conditions. The fluctuation in numbers indicates that many seeds remain dormant in the seed bank during unfavorable years for germination. As such, it is difficult to estimate the total population size. Upper counts from surveys over

the past 30 years estimated a total of 68,731 individuals (USFWS 2013a). The final listing rule provides a thorough and up-to-date review of the status of the species.

Environmental Baseline

Occurrence in the Action Area

There are 19,600 acres of critical habitat within the action area. Of the nine designated Critical Habitat Units (CHUs), unit 2 (Pyramid Rock) is the largest at approximately 17,321 acres located west of the town of DeBeque.

Past and Present Impacts

DeBeque phacelia is especially vulnerable to habitat loss by virtue of being restricted to the barren and semibarren habitat of specific members of the Wasatch geological formation that has a limited distribution within the Piceance Basin (Ladyman 2003). Its habitat coincides with high potential natural gas reserves and has historically been affected by activities associated with resource extraction. Activities that lead to significant soil disturbance, or progressive soil erosion, eliminate or sharply reduce the seed bank, which appears to be the mechanism by which populations survive. Additionally, surface-disturbing activities can introduce and spread weeds resulting in altered plant communities that threaten DeBeque phacelia.

Impacts on DeBeque phacelia have also been documented from OHV use and livestock trampling (USFWS 2013a).

Critical Habitat

Critical Habitat for DeBeque phacelia was designated and finalized on August 13, 2012 (USFWS 2012c). A total of 25,484 acres of critical habitat were designated within nine CHUs: Sulphur Gulch, Pyramid Rock, Roan Creek, DeBeque, Mount Logan, Ashmead Draw, Baugh Reservoir, Horsethief Mountain, and Anderson Gulch. BLM-administered lands within the GJFO planning area cover 19,600 acres of these CHUs (USFWS 2012c).

Critical habitat primary constituent elements for the DeBeque phacelia, are described in **Table 3-1**, Primary Constituent Elements of DeBeque Phacelia Critical Habitat.

Table 3-1
Primary Constituent Elements of DeBeque Phacelia Critical Habitat

Features	Description
Suitable Soils and Geology	• Atwell Gulch and Shire members of the Wasatch formation. • Within these larger formations, small areas (from 10 to 1,000 square feet [1 to 100 square meters]) on colorful exposures of chocolate to purplish brown, light to dark charcoal gray, and tan clay soils are especially important. These small areas are slightly different in texture and color than the similar surrounding soils. Occupied sites are characterized by alkaline (pH range from 7 to 8.9) soils with higher clay content than similar nearby unoccupied soils. • Clay soils that shrink and swell dramatically upon drying and wetting and are likely important in the maintenance of the seed bank.
Topography	• Moderately steep slopes, benches, and ridge tops adjacent to valley floors. Occupied slopes range from 2 to 42 degrees with an average of 14 degrees.
Elevation and Climate	• Elevations from 4,600 to 7,450 feet (1,400 to 2,275 meters). • Climatic conditions similar to those around DeBeque, Colorado, including suitable precipitation and temperatures. Annual fluctuations in moisture (and probably temperature) greatly influences the number of *Phacelia submutica* individuals that grow in a given year and are thus able to set seed and replenish the seed bank.

Plant Community	• Small (from 10 to 1,000 square feet [1 to 100 square meters]) barren areas with less than 20 percent plant cover in the actual barren areas.
	• Presence of appropriate associated species that can include (but are not limited to) the natives *Grindelia fastigiata, Eriogonum gordonii, Monolepis nuttalliana,* and *Oenothera caespitosa*. If sites become dominated by *Bromus tectorum* or other invasive nonnative species, they should not be discounted because *Phacelia submutica* may still be found there.
	• Appropriate plant communities within the greater pinyon–juniper woodlands that include:
	  o Clay badlands within the mixed salt desert scrub, or
	  o Clay badlands within big sagebrush shrublands.

Maintenance of the Seed Bank and Appropriate Disturbance Levels	• Within suitable soil and geologies (see Suitable Soils and Geology above), undisturbed areas where seed banks are left undamaged. • Areas with light disturbance when dry and no disturbance when wet. Clay soils are relatively stable when dry but are extremely vulnerable to disturbances when wet.

Source: USFWS 2012c

Threats

The primary threats to DeBeque phacelia are as follows (USFWS 2013a):

- Oil and gas development
- Utility and energy corridors
- Livestock use and trampling
- OHV use
- Invasive nonnative plants

- Water reservoirs
- Climate change and drought

3.2.3 Parachute Penstemon

Species Description

Parachute penstemon, which is also known as Parachute beardtongue, is a mat-forming perennial herb with thick, succulent, bluish leaves, each about 0.8 inches (2 centimeters) long and 0.4 inches (1 centimeter) wide. Plants produce shoots that run along underground, forming what appear as new plants at short distances away. The funnel-shaped flowers are white to pale lavender (USFWS 2011a).

Life History

Parachute penstemon is endemic to sparsely vegetated, steep talus slopes on the southern escarpment of the Roan Plateau in Garfield County, Colorado. The species was first discovered in 1986. Plants are found on the oil-shale rich Parachute Creek Member of the Green River Formation between 8,000 and 9,000 feet (2,440 to 2,740 meters) in elevation, although a small population was recently found on Green River shale alluvium at elevations ranging from 5,500 to 5,800 feet (1,675 to 1,770 meters). Parachute penstemon is uniquely adapted to survive on steep and constantly moving talus slopes. The stems of Parachute penstemon elongate downslope from their initial rooting point as the leaves become buried by shifting shale shards. When these stems encounter a sufficiently stable surface, they may develop a new tuft of leaves, flower, and set seed. Vegetation on these talus slopes is generally quite sparse (less than 20 percent canopy cover), providing little competition for the Parachute penstemon (USFWS 2011a).

The species blooms between June and September, and the plants produce a small number of seeds that are dispersed by gravity. They require cross pollination, and have many different pollinators that vary between occurrences. None of the pollinators are specialists to this species or rare (USFWS 2011a).

Status and Distribution

The USFWS published a final rule on July 27, 2011 to list the species as threatened under the ESA effective August 26, 2011 (76 FR 45054). Critical habitat for the species was designated on August 13, 2012 (77 FR 48367).

The historical range and distribution for this species is unknown. All of the currently known occurrences occupy about 91.8 acres on the Green River geologic formation in Garfield County, Colorado (USFWS 2011a). Although this formation is located underground throughout most of the Piceance Basin, it is exposed on much of the southern face of the Roan Plateau, the area in which the plant is restricted. The total area of the plant's geographic range is about 2 miles (3 kilometers) wide and 17 miles (27 kilometers) long. Six occurrences of

Penstemon debilis were found between 1986 and 2005; two of them are no longer considered viable (USFWS 2014a). The total estimated population size consists of only 4,138 individuals (USFWS 2013b). It is likely that unknown occurrences exist, because many areas are inaccessible to surveyors due to cliff-side terrain or private lands.

Environmental Baseline

Occurrence in the Action Area

There are seven known occurrences of the Parachute penstemon, two of which are wholly or partially on BLM-administered lands within the GJFO planning area. These include the Mount Logan Road population and the Mount Logan Mine population. The Mount Logan Mine population has an estimated 533 plants, the majority of which occur on private lands. The Mount Logan Road population, which extends along a mining road, is nearly extirpated with 3 estimated occurrences (USFWS 2013b).

Scattered plants have also been found outside of the GJFO planning area in Smith Gulch, an outwash within the BLM's Colorado River Valley Field Office far below the expected elevation for this species. This may mean that there are more populations in the GJFO planning area at lower elevations. However, none are known at this time.

Past and Present Impacts

Maintenance and reclamation activities along Logan Wash Mine access road have resulted in plant mortality and habitat destruction. Oil and gas development and oil shale extraction also threaten the species (USFWS 2013b). Forty percent of occupied habitat and 69 percent of the plants are located on Oxy USA WTP LP (Oxy) property under a State of Colorado Natural Area Program (CNAP) agreement, where the plants are minimally disturbed. A proposal to designate the Logan Wash Mine site as a Natural Area would provide additional protection to the species and its habitat found in this area.

Critical Habitat

Four CHUs covering 15,510 acres have been designated for Parachute penstemon: Brush Mountain, Cow Ridge, Mount Callahan, and Anvil Points (USFWS 2012c). The Brush Mountain and Cow Ridge CHUs are not occupied; however, they contain the primary constituent elements sufficient to support the life-history needs of the species. The unoccupied CHUs were designated for future recovery efforts, that may include the creation of new Parachute penstemon populations. There are 7,100 acres of critical habitat within the planning area.

Critical habitat primary constituent elements for the Parachute penstemon are described in **Table 3-2**, Primary Constituent Elements of Parachute Penstemon Critical Habitat.

Table 3-2
Primary Constituent Elements of Parachute Penstemon Critical Habitat

Features	Description
Suitable Soils and Geology	• Parachute Member and the Lower part of the Green River Formation. • Appropriate soil morphology characterized by a surface layer of small to moderate shale channers (small flagstones) that shift continually due to the steep slopes and below a weakly developed calcareous, sandy to loamy layer with 40 to 90 percent coarse material.
Elevation and Climate	• From 5,250 to 9,600 feet (1,600 to 2,920 meters). Climatic conditions similar to those of the Mahogany Bench, including suitable precipitation and temperatures.
Plant Community	• Barren areas with less than 10 percent plant cover. • Presence of other oil shale endemics, including *Mentzelia rhizomata, Thalictrum heliophilum, Astragalus lutosus, Lesquerella parviflora, Penstemon osterhoutii,* and *Festuca dasyclada (*also *P. caespitosus)*.
Habitat for Pollinators	• Pollinator ground and twig nesting habitats. Habitats suitable for a wide array of pollinators and their life history and nesting requirements. A mosaic of native plant communities generally would provide for this diversity (see Plant Community above). These habitats can include areas outside of the soils identified in Suitable Soils and Geology. • Connectivity between areas allowing pollinators to move from one population to the next within units. • Availability of other floral resources. This would include other flowering plant species that provide nectar and pollen for pollinators. Grass species do not provide resources for pollinators. • To conserve and accommodate these pollinator requirements, USFWS has identified a 3,280-ft (1,000-m) area beyond occupied habitat to conserve the pollinators essential for reproduction.
High levels of natural disturbance	• Very little or no soil formation. • Slow to moderate, but constant, downward motion of the oil shale that maintains the habitat in an early successional state.

Source: USFWS 2013b

Threats

The primary threats to Parachute penstemon are as follows (USFWS 2013b):

- Oil and gas development
- Oil shale extraction and mine reclamation
- Vehicle access through occupied habitat
- Climate change, drought, and impacts on the vegetative community
- Invasive species

3.2.4 Ute Ladies'-tresses Orchid

Species Description

Ute ladies'-tresses orchid is a perennial, terrestrial orchid with erect, glandular-pubescent stems 6 to 20 inches (15 to 50 centimeters) tall arising from tuberous-thickened roots. Basal leaves are linear and persist at flowering time. Leaves become progressively reduced in size up the stem. The flower consists of a few to many small white to ivory flowers arranged in a spike formation at the top of the stem. The individual flowers are stout and ringent, and face directly away from the stalk (USFWS 1992).

Ute ladies'-tresses orchid first appears above-ground as a rosette of thickened grass-like leaves that can be difficult to distinguish from other plants. Some individuals remain under ground or do not flower each year and fluctuations in mature flowering adults do not necessarily correspond to population fluctuations or indicate habitat alterations (USFWS 1992).

Life History

Ute ladies'-tresses orchid habitat is found along freshwater streams emerging from the flanks of mountains where the streambed is beginning to level out and meander within a developing floodplain. These streams are very dynamic and may be subject to seasonal flooding from snowmelt and intermittent heavy thunderstorms. Due to variations in snowpack, these streams experience fairly frequent severe (overbank) flooding sufficient to cause movement of the stream channel within its floodplain (USFWS 1992).

The orchid colonizes early successional riparian habitats such as point bars, sand bars and low lying gravelly, sandy, or cobbly edges. As the stream channel changes location and depth, the orchid persists in those areas where the hydrology provides continual dampness in the rooting zone throughout the growing season. These areas include old oxbows, side channels, or older stream channels that have been filled in with alluvial material, but which still have a hydrologic connection, through groundwater, to the stream system (USFWS 1992). The orchid is tolerant of a mix of wetland forb and grass species, is not tolerant of long-term standing water and does not compete with emergent plant species (e.g., cattails) or aggressive species that form dense monocultures such as Canada thistle or reed canarygrass (USFWS 1992). Competition with exotic species is a threat to Ute ladies'-tresses, along with habitat conversion due to invasive weed species (USFWS 1995).

Bumblebees (*Bombus* spp.) along with solitary native bees *(Anthophora* spp.*)* are the primary pollinators for Ute ladies'-tresses orchid. Less frequently, non-native honeybees *(Apis mellifera)* also serve as pollinators (Sipes and Tepedino 1995).

Ute ladies'-tresses orchid reproduces by seed. The orchid may not flower every year and may remain dormant below ground during years of drought. Ute

ladies'-tresses produce cylindrical fruit containing numerous seeds (USFWS 2014c). Fruit maturation occurs in late August to September (USFWS 2014c). A single plant may produce tens of thousands of seeds per year, although it is hypothesized that a symbiotic mycorrhizal relationship may be necessary before a seed can begin germination (USFWS 2014c).

Status and Distribution

The Ute ladies'-tresses orchid was listed as a threatened species under a final rule published in 1992 (57 FR 2048). Critical habitat has not been designated. A draft recovery plan was published in 1995 (USFWS 1995). No final plan has been published. Populations of Ute ladies'-tresses orchids occur in three general areas of the western United States: near the base of the eastern slope of the Rocky Mountains in southeastern Wyoming and north-central and central Colorado; in the upper Colorado River Basin, particularly in the Uintah Basin; and in the Bonneville Basin along the Wasatch Front and westward in the eastern Great Basin, in north-central and western Utah and eastern Nevada (USFWS 1995). The species has been documented in Nebraska, Wyoming, Utah, Colorado, Nevada, Idaho, Washington, and Montana (USFWS 2004a).

Environmental Baseline

Occurrence in the Action Area

There are no known occurrences of the Ute ladies'-tresses orchid within the GJFO planning area. Potential habitat is present near the DeBeque area and Plateau Creek.

Past and Present Impacts

Population extirpation from urbanization has been documented along the Wasatch Front and the Front Range. The species depends on natural stream processes; therefore, reservoirs, dams, diversions, and other water depletions can easily affect habitat functionality (USFWS 1995). Invasion of exotic plant species has also affected the Ute ladies'-tresses. In populations near Boulder, Canada thistle growth was documented as prevented flowering and reproduction (USFWS 1995).

Critical Habitat

Critical habitat has not been designated for the Ute ladies'-tresses orchid.

Threats

The primary threats to Ute ladies'-tresses orchid are as follows (USFWS 1995):

- Habitat loss and modification
- Livestock use and grazing
- Stream and watershed alterations including water depletions
- Invasive species

3.2.5 Colorado Pikeminnow

Species Description

The Colorado pikeminnow (formerly the Colorado squawfish) is the largest cyprinid fish endemic to the Colorado River Basin. This species historically reached a maximum length of approximately 6 feet (1.8 meters) and a maximum weight of 80 pounds (36 kilograms; USFWS 2002b). Young are silvery and usually have a dark wedge-shaped spot at the base of the caudal fin. Adults are strongly counter-shaded, with a dark olive back and a white belly. Today's fish rarely exceed 3 feet (0.9 meters) in length or weigh more than 18 pounds (8 kilograms).

Life History

The Colorado pikeminnow is a long-distance migrator and top ecosystem predator. It lives in warm water reaches of the Colorado River main stem and larger tributaries. It requires uninterrupted stream passage for spawning migrations and young dispersal (USFWS 2002b). The species is adapted to a hydrologic cycle characterized by large spring peaks of snowmelt runoff and low, relatively stable base flows. High spring flows create and maintain in-channel habitats and reconnect floodplain and riverine habitats; this phenomenon is described as the spring flood-pulse.

Throughout most of the year, juvenile, subadult, and adult Colorado pikeminnow use relatively deep, low-velocity eddies, pools, and runs that occur in nearshore areas of main river channels. In the spring, Colorado pikeminnow adults use floodplain habitats, flooded tributary mouths, flooded side canyons, and eddies that are available only during high flows. Such environments may be particularly beneficial for Colorado pikeminnow because other riverine fishes gather in floodplain habitats to exploit food and temperatures and may serve as prey. Such low-velocity environments also may serve as resting areas for Colorado pikeminnow. River reaches of high habitat complexity appear to be preferred. Young pikeminnow feed on insects and plankton, adults feed on other fishes (USWFS 2002b).

Status and Distribution

The Colorado pikeminnow is listed as endangered under the ESA (16 USC, Section 1531 et seq.). It was included on the first list of endangered species issued by the Office of Endangered Species on March 11, 1967 (32 FR 4001) and was considered endangered under provisions of the Endangered Species Conservation Act of 1969 (16 USC, Section 668aa). The Colorado pikeminnow was included on the United States List of Endangered Native Fish and Wildlife issued on June 4, 1973 (38 FR 14678). It received protection as endangered under Section 4(c)(3) of the original ESA of 1973.

The current revised Colorado pikeminnow recovery plan was approved on August 1, 2002 (USFWS 2002b). The final rule for determining critical habitat

was published on March 21, 1994 (USFWS 1994), and the final designation became effective on April 20, 1994.

The Colorado pikeminnow is one of four endangered fish species addressed in a Recovery Implementation Program for the Upper Colorado River Basin (USFWS 1987). The program was initiated in January 1988 and is described in later in this section.

Colorado pikeminnow is currently restricted to the upper Colorado River Basin. It inhabits warm-water reaches of the Colorado, Green, San Juan, Yampa, and White Rivers and their associated tributaries. Most of Lake Powell is not suitable habitat for Colorado pikeminnow, so it is not designated critical habitat. Its 1,148 designated miles (1,847 kilometers) represent 29 percent of the historical habitat for the species.

Environmental Baseline

Occurrence in the Action Area
Colorado pikeminnow reside in the GJFO planning area in the Gunnison and Colorado Rivers. Colorado pikeminnow prefer larger river habitats but are known to use smaller tributary habitats throughout the Colorado River Basin. Adults require pools, deep runs, and eddies maintained by high spring flows; young require nursery habitats, including backwaters restructured by high spring flows and maintained by relatively stable base flows. The "15-Mile Reach" in Grand Junction, along the Colorado River, is a known congregation area for spawning Colorado pikeminnow.

Past and Present Impacts
The following factors contributed historically to the decline of the Colorado pikeminnow:

- Changes in flow regime (especially the timing and amplitude of high flows) associated with construction of dams and irrigation diversions.
- Reduced flow volumes that prevent effective or efficient movement of sediment. This has resulted in river channel constriction, reduced spawning habitat, loss of habitat complexity and diversity, and impacts on reproduction and recruitment.
- Elevated selenium concentrations due to watershed level inputs from the Mancos Shale-based soils upstream of the GJFO planning area.
- Interference with migration to and from spawning grounds from dams and other in-stream features.
- Competition or predation on eggs, larvae, and juvenile fish by introduced predatory game and non-game fishes.

The impoundment of water and water depletion from the Colorado River and its tributaries has also been a large factor in the decline of this species. Important micro-habitats such as backwaters can be dewatered or reduced in volume or lost due to reduced flows. The frequency of periodic flooding of river bottomlands located next to the river can be reduced. Flooded bottomlands are important for riparian regeneration and maintenance and as seasonal foraging habitat. Streamflow regulation includes main stem dams that have the following adverse effects on Colorado pikeminnow and its habitat:

- Block migration
- Change flow patterns (reduce peak flows, change timing of snowmelt runoff)
- Release cold water, making temperature regimes less than optimal
- Change river habitat into lake habitat
- Reduce flow volumes, which can prevent effective and efficient sediment movement

In the upper basin, 435 miles (700 kilometers) of Colorado pikeminnow habitat has been lost by reservoir inundation from Flaming Gorge Reservoir on the Green River, Lake Powell on the Colorado River, and Navajo Reservoir on the San Juan River. Coldwater releases from these dams have eliminated suitable habitat for native fishes, including Colorado pikeminnow, from river reaches downstream for approximately 50 miles (80 kilometers) below Flaming Gorge Dam and Navajo Dam.

In addition to main stem dams, many dams and water diversion structures occur in and upstream of critical habitat. This reduces flows and alters flow patterns, which adversely affect critical habitat. Diversion structures in critical habitat divert fish into canals and pipes where the fish are permanently lost to the river system. The number of endangered fish lost in irrigation systems is unknown, but in some years, in some river reaches, most of the river flow is diverted into unscreened canals. High spring flows that maintain habitat diversity have been reduced by dams regulating flow and by water diversions. Frequency and magnitude of peak flows have been reduced by dams, resulting in the loss of flushing sediments from spawning substrates, lowered invertebrate food production, lessened formation of gravel and cobble deposits important for spawning, and loss of backwater nursery habitats (McAda 2002; Muth et al. 2000).

Predation and competition from nonnative fishes have been clearly implicated in the population reductions or elimination of native fishes in the Colorado River Basin (Dill 1944; Osmundson and Kaeding 1989; Behnke 1980; Joseph et al. 1977; Lanigan and Berry 1979; Minckley and Deacon 1968; Meffe 1985; Propst and Bestgen 1991; Rinne 1992). Data collected by Osmundson and Kaeding (1991) indicate that during low-water years, the number of nonnative fish ,

capable of preying on or competing with larval endangered fishes, greatly increased.

More than 50 nonnative fish species were intentionally introduced in the Colorado River Basin before 1980. The nonnatives were intended for sport fishing, forage fish, biological control, and ornamental purposes (Minckley 1982; Tyus et al. 1982; Carlson and Muth 1989). Nonnative fishes compete with native fishes in several ways, resulting in smaller populations and species size. Because the capacity of a particular area to support aquatic life is limited by physical habitat conditions, increasing the number of species in an area usually results in a smaller population of most species. The size of each species population is controlled by the ability of each life stage to compete for space and food resources and to avoid predation. Some nonnative fishes during certain life stages appear to have a greater ability to compete for space and food and to avoid predation in the altered habitat than do some native fishes in certain life stages.

The Colorado pikeminnow is one of 4 endangered native fishes in the upper Colorado River Basin, including the endangered humpback chub, bonytail, and razorback sucker, which are found only in the Colorado River system. In 1988, the Upper Colorado River Endangered Fish Recovery Program was established to help bring these four endangered species back from the brink of extinction. The Recovery Program is a unique partnership of local, state, and federal agencies, water and power interests, and environmental groups working toward the recovery of endangered fish in the upper Colorado River Basin, while water development proceeds in accordance with federal and state laws and interstate compacts.

This major undertaking involves restoring and managing streamflows and habitat, boosting wild populations with hatchery-raised endangered fish, and reducing negative interactions with certain nonnative fish species. The goal of recovery is to achieve natural, self-sustaining populations of the endangered fish so they no longer require protection under the ESA.

The recovery program was initiated in 1988 with the signing of a cooperative agreement by the governors of Colorado, Utah, and Wyoming; the Secretary of the Interior; and the administrator of the Western Area Power Administration. In 2013, these parties agreed to extend the cooperative agreement through September 30, 2023. The program provides ESA compliance for continued operation of federal water and power projects, in accordance with project purposes.

With its demonstrated successes, the Upper Colorado River Endangered Fish Recovery Program has become a national model for its collaborative conservation efforts to protect endangered species.

Critical Habitat

Critical habitat was designated in 1994 in the 100-year floodplain of the Colorado pikeminnow's historical range. Within the GJFO planning area, designated critical habitat for the Colorado pikeminnow includes the following two areas: the 100-year floodplain of the Colorado River from the eastern boundary of the GJFO to the Utah state line and beyond, and the 100-year floodplain of the Gunnison River from the southern GJFO boundary to the confluence with the Colorado River.

Critical habitat primary constituent elements for the four endangered big river fishes, including Colorado pikeminnow, are described in **Table 3-3**, Primary Constituent Elements of Critical Habitat for Colorado Pikeminnow, Razorback Sucker, Bonytail, and Humpback Chub.

Table 3-3
Primary Constituent Elements of Critical Habitat for Colorado Pikeminnow, Razorback Sucker, Bonytail, and Humpback Chub

Features	Description
Water	A quantity of water of sufficient temperature, dissolved oxygen, lack of contaminants, nutrients, and turbidity delivered to a specific location, in accordance with a hydrologic regime that is required for the particular life stage of each species.
Physical habitat	Areas of the Colorado River system that are inhabited or potentially habitable by fish for use in spawning, nursery, feeding, and rearing; it also refers to corridors between these areas. In addition to river channels, these areas include bottomlands, side channels, secondary channels, oxbows, backwaters, and other areas in the 100-year floodplain. When inundated, these areas provide spawning, nursery, feeding and rearing habitats or access to these habitats.
Biological Environment	Food supply, predation, and competition are important elements of the biological environment and are considered components of the biological environment. Food supply is a function of nutrient supply, productivity, and availability to each life stage of the species. Predation and competition, although considered normal components, are out of balance due to introduced nonnative fish species in many areas.

Source: USFWS 1994

Threats

The primary threats to Colorado pikeminnow are as follows:

- Streamflow reduction and regulation and habitat modification
- Competition with and predation by nonnative fishes
- Pesticides and other pollutants (BLM 2008a; USFWS 2002b)

3.2.6 Razorback Sucker

Species Description

The razorback sucker is a large catostomid fish endemic to the Colorado River Basin. It is the only sucker with a sharp-edged dorsal keel behind its head. In the lower Colorado River Basin, these fish have reached lengths of over 3 feet (0.9 meters) and a weight of as much as 10 pounds (4.5 kilograms). Fish in the upper Colorado River Basin tend to be smaller than those in the lower Colorado River Basin. They may live for over 40 years (USFWS 2002c).

Life History

Adult razorback suckers occupy different habitats seasonally. Spring habitats required by adults in rivers are deep runs, eddies, backwaters, and flooded off-channel environments; summer habitats are runs and pools, often in shallow water associated with submerged sandbars; and winter habitats are low-velocity runs, pools, and eddies. The species spawns in rivers during spring runoff, over bars of cobble, gravel, and sand substrates. Water flow range widely, and water temperatures are typically greater than 57 degrees Fahrenheit (13.9 degrees Celsius; USFWS 2002c). Razorback suckers breed in the spring, when flows in riverine environments are high typically. Their diet consists primarily of algae, plant debris, and aquatic insect larvae.

Status and Distribution

The razorback sucker is currently listed as endangered under the ESA, under a final rule published on October 23, 1991 (56 FR, 54957). A recovery plan was approved on August 1, 2002 (USFWS 2002c); a previous recovery plan was dated December 23, 1998 (USFWS 1998c). The final rule for determination of critical habitat was published on March 21, 1994 (USFWS 1994), and the final designation became effective on April 20, 1994. The species is also state-listed as endangered.

The razorback sucker is one of four endangered fish species addressed in the Recovery Implementation Program for the Upper Colorado River Basin (USFWS 1987). The program was initiated in January 1988 and is described in Section 3.2.5 of this BA.

Historically, razorback suckers were found in the main stem Colorado River and in its major tributaries in Arizona, California, Colorado, Nevada, New Mexico, Utah, Wyoming, and Mexico. This species was reportedly once so numerous that it was commonly used as food by early settlers; commercially marketable quantities were caught in Arizona as recently as 1949. In the upper basin, razorback suckers were reported in the Green River to be very abundant near Green River, Utah, in the late 1800s (USFWS 1991).

In the upper Colorado River Basin, above Glen Canyon Dam, razorback suckers are currently found in limited numbers in both lentic (lake-like) and riverine environments. The largest populations of razorback suckers in the upper basin

are found in the upper Green and lower Yampa Rivers (Tyus 1987). In the Colorado River, most razorback suckers occur in the Grand Valley area near Grand Junction, Colorado, but they are increasingly rare.

Environmental Baseline

Occurrence in the Action Area
Razorback suckers reside in the Gunnison and Colorado Rivers within the GJFO planning area. The GJFO planning area contains designated critical habitat for this species.

Past and Current Impacts
The abundance and distribution of the razorback sucker have been dramatically reduced because of water developments, such as dams and water diversions. Dams have altered the timing, magnitude, and duration of flows that characterize the variation in annual runoff in unaltered, large rivers. Altered flows resulting from dam operation can also affect the abundance and distribution of spawning and rearing habitats preferred by the razorback sucker.

Historical water depletions and any new water depletions are likely to negatively affect population and habitat conditions downstream, although assessing the effects on species' viability may be difficult.

In addition, incidental catch by recreational anglers may pose a threat from stress-caused direct and delayed mortality (USFWS 2002c). The impoundment of water and water depletion from the Colorado River and its tributaries has been a large factor in the decline of this fish.

Critical Habitat
Critical habitat was designated in 1994 in the 100-year floodplain of razorback sucker historical range. Within the GJFO planning area, designated critical habitat for the razorback sucker includes the following two areas: the 100-year floodplain of the Colorado River from the eastern boundary of the GJFO to the Utah state line and beyond, and the 100-year floodplain of the Gunnison River from the southern GJFO boundary to the confluence with the Colorado River.

Threats
The primary threats to razorback sucker are as follows:

- Water developments, such as dams and water diversions and water depletions
- Habitat alterations and reductions or loss of important micro-habitats
- Introduction of nonnative fishes, which compete for resources and can hybridize with this species
- Pollutants and pesticides

3.2.7 Bonytail

Species Description

The bonytail is a large fish in the minnow family. It is endemic to the Colorado River Basin and can live for 50 years. Adult bonytail are gray or olive-colored on the back, with silvery sides and a white belly. The adult bonytail has an elongated body with a long, thin caudal peduncle (a stalk-like part). The head is small and compressed, compared to the rest of the body. The mouth is slightly overhung by the snout and there is a smooth low hump behind the head that is not as pronounced as that on humpback chub. Adults attain a maximum length of about 22 inches (55 centimeters) and maximum weight of about 2.4 pounds (1.1 kilograms; USFWS 2002a).

Life History

Little is known about the specific habitat requirements of bonytail because the species was extirpated from most of its historic range before extensive fishery surveys. The bonytail is adapted to main stem rivers, where it has been observed in pools and eddies. Similar to other closely related *Gila* species, bonytail in rivers probably spawn in spring over rocky substrates. Spawning in reservoirs has been observed over rocky shoals and shorelines. Based on available distribution data, flooded bottomland habitats are likely important growth and conditioning areas for bonytail, particularly as nursery habitats for young. Flow recommendations specifically consider flow-habitat relationships in historic habitat of bonytail in the upper basin. These recommendations were designed to enhance habitat complexity and to restore and maintain ecological processes (USFWS 2002a).

The bonytail's large fins and streamlined body are an adaptation to torrential flows. Of five specimens captured in the upper basin, four were captured in deep, swift, rocky canyon regions (Yampa Canyon, Black Rocks, Cataract Canyon, and Coal Creek Rapid); the fifth was taken in a reservoir (Lake Powell). All fish taken from the lower basin since 1974 were caught in reservoirs. Individuals found in reservoirs are believed to inhabit their former habitats now inundated by these impoundments.

Vanicek (1967), who handled numerous bonytail, detected no difference in their habitat selection from roundtail chub. These bonytail were generally found in pools and eddies in the absence of, although occasionally next to, strong currents and at varying depths, generally over silt and silt-boulder substrates. No quantitative habitat data are available for this species. Adult bonytail captured in Cataract Canyon and Desolation/Gray Canyons were sympatric (related species occurring in the same area) with humpback chub. Both were found in shoreline eddies, among emergent boulders and cobble and next to swift currents (USFWS 2002a).

Similarly, little is known of the food habits of the bonytail. They are reportedly largely omnivorous, with a diet of terrestrial insects, plant matter, and fish. Several chubs were observed feeding on floating debris washed by heavy rainfall. Vanicek (1967) reported that "Colorado chubs" fed mainly on terrestrial insects (mostly adult beetles and grasshoppers), plant debris, leaves, stems, and woody fragments (USFWS 2002a).

Status and Distribution

The bonytail is listed as endangered under the ESA under a final rule published on April 23, 1980 (45 FR 27710). A recovery plan was approved on September 4, 1990 (USFWS 1990a). Recovery goals were subsequently published in an amendment and supplement to the recovery plan dated August 1, 2002 (USFWS 2002a). The final rule for determination of critical habitat was published on March 21, 1994 (59 FR 13374), and the final designation became effective on April 20, 1994.

A Recovery Implementation Program for the four upper Colorado River Basin endangered fish species, including bonytail, was initiated in January 1988. The program is comprised of federal, state, and private cooperators. It provides specific goals for the recovery of endangered Colorado River fish, while promoting sustainable water development and use (USFWS 1987). In addition, critical habitat for all four species was designated on March 21, 1994 (59 FR 13374).

Until the 1950s, bonytail was historically common or abundant in warm-water reaches of large rivers, from Mexico to Wyoming. It was found far downstream in the main stem Colorado River near the Colorado-Utah border in the Black Rocks area (USFWS 2002a). The last known riverine area where bonytail were common was the Green River in Dinosaur National Monument. Here Vanicek (1967) and Holden and Stalnaker (1970) collected 91 specimens from 1962 to 1966. From 1977 to 1983, no bonytail were collected from the Colorado or Gunnison Rivers in Colorado or Utah. However, in 1984, a single bonytail was collected from Black Rocks on the Colorado River. Several suspected bonytail were captured in Cataract Canyon between 1985 and 1987.

Current stocking plans for bonytail identify the middle Green River and the Yampa River in Dinosaur National Monument as the highest priority areas in Colorado (USFWS 2002a).

Bonytail are so rare that it is not possible to conduct population estimates. A stocking program is being implemented to reestablish populations in the upper Colorado River Basin. From 1996 through 2004, 44,472 subadult bonytail were stocked in the Green and upper Colorado River subbasins. The recovery goals (USFWS 2002a) call for reestablished populations in the Green River and upper Colorado River subbasins, each with over 4,400 adults that are self-sustaining with recruitment.

Environmental Baseline

Occurrence in the Action Area
Bonytail likely reside in the GJFO planning area in the Gunnison and Colorado Rivers because of their preferences for larger main-stem rivers with pool and eddy habitats. It is also thought that flooded bottomland habitats are important growth and conditioning areas for the species, particularly as nursery habitats for young.

Past and Current Impacts
The past and current impacts on bonytail are similar to those described in Section 3.2.5 for Colorado pikeminnow.

Critical Habitat
Critical habitat was designated in 1994 in the 100-year floodplain of the bonytail's historical range. Within the action area, designated critical habitat is located along the Colorado River from Black Rocks adjacent to the McInnis Canyons Nation Conservation Area to the Utah state line and beyond to Lake Powell, Utah (USFWS 1994).

Threats
The primary threats to bonytail are as follows:

- Streamflow reduction and regulation and habitat modification
- Competition with and predation by nonnative fishes
- Pollutants and pesticides

3.2.8 Humpback Chub

Species Description
The humpback chub is a medium to large cyprinid fish endemic to the Colorado River Basin (Miller 1946). Adults have a pronounced dorsal hump, a narrow, flattened head, a fleshy snout, and small eyes. They are silvery, with a brown or olive back. Adults attain a maximum size of about 1.5 feet (48 centimeters) and a weight of about 2.5 pounds (1.2 kilograms; Valdez and Ryel 1997). They can live for 30 years.

Life History
The humpback chub is omnivorous, feeding on aquatic arthropods (insects), smaller fishes, and algae. Adults require eddies and sheltered shoreline habitats maintained by high spring flows. Young require low-velocity shoreline habitats, including eddies and backwaters. Humpback chub live and complete their entire life cycle in canyon-bound reaches of the Colorado River main stem and larger tributaries. These reaches are characterized by deep water, swift currents, and rocky substrates. Subadults use shallow, sheltered shoreline habitats, whereas adults use primarily offshore habitats of greater depths (USFWS 2002d).

Status and Distribution

The humpback chub is currently listed as endangered under the ESA. It was included on the first List of Endangered Species issued by the Office of Endangered Species on March 11, 1967 (32 FR 4001) and it was considered endangered under provisions of the Endangered Species Conservation Act of 1969 (16 USC, Section 668aa). The humpback chub was included in the United States List of Endangered Native Fish and Wildlife issued on June 4, 1973 (38 FR 14678). It received protection as endangered under Section 4(c)(3) of the original ESA of 1973.

The humpback chub recovery plan was approved on September 19, 1990 (USFWS 1990b). Recovery goals were subsequently published in an amendment and supplement to the recovery plan dated August 1, 2002 (USFWS 2002d). The final rule for determination of critical habitat was published on March 21, 1994 (59 FR 13374); the final designation became effective on April 20, 1994. The species is also state listed as endangered.

The humpback chub is one of four endangered fish species addressed in the Recovery Implementation Program for the upper Colorado River Basin (USFWS 1987). The program was initiated in January 1988 and is described in Section 3.2.5.

The historical distribution of the humpback chub is not well known because it was not described as a species until 1946; however, its original distribution was presumably limited to swift deep-water areas in the main stem Colorado River Basin, downstream to below the Hoover Dam site. In the upper basin in Colorado, the humpback chub has been found in the Yampa, Gunnison, Green, and Colorado Rivers. However, the greatest number of humpback chub in Colorado are found at the Black Rocks area of the Colorado River (in the GJFO planning area and also the McInnis Canyon NCA downstream of Grand Junction) and in Utah (along the Westwater Canyon of the Colorado River; BLM 2012c).

Today the largest populations of this species occur in the Little Colorado and Colorado Rivers in the Grand Canyon and in the Black Rocks and Westwater Canyon in the upper Colorado River. Hybridization with roundtail chub (*Gila robusta*) and bonytail (*G. elegans*) is recognized as a threat to humpback chub. A larger proportion of roundtail chub has been found in Black Rocks and Westwater Canyon during low-flow years (Kaeding et al. 1990; Chart and Lentsch 2000). This increases the chances for hybridization.

Environmental Baseline

Occurrence in the Action Area

The humpback chub is known to occur within the GJFO near the Black Rocks area in the Colorado River below the confluence with the Gunnison River.

Past and Current Impacts
The impoundment of water and water depletion from the Colorado River and its tributaries has been a large factor in the decline of humpback chub. The existing habitat has been modified to the extent that it impairs essential behavior patterns, such as breeding, feeding, and sheltering. Survival rates in young humpback chub (less than 2 years) are thought to be less than 1 in 1,000 (USFWS 2008).

Critical Habitat
Critical habitat was designated in 1994 in the 100-year floodplain of the humpback chub's historical range. Within the action area, designated critical habitat is located along the Colorado River from Black Rocks, adjacent to the McInnis Canyons Nation Conservation Area to the Utah state line and beyond to Lake Powell, Utah (USFWS 1994).

Threats
The primary threats to humpback chub are as follows:

- Streamflow reduction and regulation and habitat modification
- Competition with and predation by nonnative fishes
- Pollutants and pesticides

3.2.9 Greenback Cutthroat Trout

Species Description
The true greenback cutthroat trout is a salmonid native to the headwaters of the South Platte River drainage. Adult greenbacks are greenish brown to olive-colored on the back with silvery to yellow sides and a white belly (red during spawning). They have a crimson slash under each side of the lower jaw and low numbers of large spots concentrated toward the tail fin. Greenback, like all cutthroat subspecies, inhabits cold-water streams and lakes with adequate spawning habitat present in the spring of the year.

The status of cutthroat trout in Colorado has been in a state of flux for some time. However, new research on cutthroat trout genetics (Metcalf et al. 2007, 2012), and new research on cutthroat trout meristics (Bestgen et al. 2013) across the state of Colorado has emerged. With the advent of new genetic testing procedures, and new analysis, the picture has become clearer. Ever since the greenback cutthroat trout (*Oncorhynchus clarki stomias*) was listed as endangered under the Endangered Species Act in 1974, there has been strong interest in developing methods to distinguish them from closely related subspecies with confidence. Prior to recent molecular testing, phenotypic traits associated with greenback cutthroat trout were larger spots, and higher scale counts above the lateral line and in the lateral series when compared to Colorado River cutthroat trout (*O. c. pleuriticus*; Behnke 1992). However, these two subspecies cannot be separated consistently on the basis of those

characteristics (Behnke 1992). As a result, geographic range had become the default approach for establishing subspecies designation and occupation.

Based on geographic range, it was for years believed that Colorado contained four subspecies of cutthroat trout: the greenback cutthroat (*Oncorhynchus clarki stomias*) in the South Platte and Arkansas basins, the Rio Grande cutthroat (*Oncorhynchus clarki virginalis*) in the Rio Grande basin, the extinct yellowfin cutthroat (*Oncorhynchus clarki macdonaldi*) in the upper Arkansas River basin (Twin Lakes), and the Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*) in all five major river basins west of the Continental Divide.

Early molecular work did not distinguish between the subspecies, but in 2007, Metcalf et al. used mitochondrial and nuclear molecular markers to suggest that indeed there was a genetic basis for separating greenback cutthroat trout from Colorado River cutthroat trout. The primary concern raised by that paper was five of the nine east slope greenback cutthroat trout populations they examined actually displayed genetic fingerprints more similar to Colorado River cutthroat trout of Trappers Lake (White River basin) origin than they did with many of the other greenback populations. This was particularly troubling since mechanisms were in place to deliver Colorado River cutthroat trout to the East Slope. From 1903 through 1938, at least 80 million pure Colorado River cutthroat trout were produced at Trappers Lake (Rogers 2012). Millions more were produced on the south slope of Pikes Peak (Rogers and Kennedy 2008). Although the fate of many of those fish remains a mystery, it is clear that they were stocked in virtually every county east of the Continental Divide that would support trout (Metcalf et al. 2012).

A finding of Metcalf et al. (2007) that attracted less attention was the discovery of a "greenback" cutthroat trout population west of the Continental Divide near Gunnison in West Antelope Creek. Intensive survey and genetics testing work since that time indicated that in fact the West Antelope Creek population is not unique, and that populations with similar genetic fingerprints are pervasive across Colorado's western slope (Rogers 2010). That finding lead the Greenback Cutthroat Trout Recovery Team to question whether the West Antelope Creek fish were really greenback cutthroat trout as suggested by Metcalf et al. (2007), or whether they simply represented diversity within Colorado River cutthroat trout (Rogers 2010). In an effort to avoid confusion, trout with this genetic fingerprint are hereafter referred to as green lineage cutthroat trout, while cutthroat trout displaying the genetic signature commonly associated with those from Trappers Lake (White and Yampa river basins) are referred to as Blue Lineage cutthroat trout.

Life History

Greenback, like all cutthroat subspecies, inhabits cold-water streams and lakes with adequate spawning habitat present in the spring of the year. Spawning generally occurs when water temperatures reach 5 to 8 degrees Celsius.

Greenback feed on a wide variety of organisms but their primary source of food is aquatic and terrestrial insects. Size and growth of greenbacks varies, based upon elevation and population size, typically 1 to 2 pounds maximum (USFWS 1998b).

Status and Distribution

Greenback distribution and numbers of fish declined rapidly beginning in the 1800s. By 1973, when the ESA was passed into law, greenbacks were believed to only exist in two small headwater streams (Como Creek and South Fork, Cache La Poudre River). The subspecies was listed under the ESA as endangered in 1973 and downlisted to threatened in 1978 (USWFS 1978). Cooperative efforts between the CPW, USFS, BLM, USFWS and Rocky Mountain National Park have led to a large recovery effort for the greenback cutthroat trout. Today, it appears that only one true greenback population exists in Bear Creek near Colorado Springs, CO (Metcalf et al. 2012).

In 2012, the native distribution of different lineages of cutthroat trout in Colorado was clarified greatly with work published by a University of Colorado led research team that examined DNA from 150 year old museum specimens collected prior to large-scale stocking activities (Metcalf et al. 2012). This work confirmed that indeed, green lineage cutthroat trout are at least native to the Colorado and Gunnison river basins. Additional work suggests they probably were found in the Dolores River basin as well (Rogers 2010), with every other remaining major basin represented by its own distinct lineage. Since the subspecies were described using phenotypic characters, and recent court cases have affirmed that visual characteristics should be central to the description of taxa (Kaeding 2003), the Recovery Team launched an additional research project with the Larval Fish Lab at Colorado State University to explore if distinct phenotypes can be predicted from these underlying genetic fingerprints. The results of this meristics study (Bestgen et al. 2013) largely support the genetic information that suggests six distinct lineages of cutthroat trout historically existed in Colorado.

Environmental Baseline

Occurrence in the Action Area

Based on recent genetic research (Metcalf et al. 2012), only one remaining population of true greenback cutthroat trout exists in Colorado. However, until such time as the genetic and physical characteristic research is interpreted and decisions are made, previously suspected greenback cutthroat trout (green lineage) populations in western Colorado will continue to be considered as greenbacks with regard to ESA compliance, per USFWS direction (USFWS 2012e). Currently, seven conservation populations of green lineage cutthroat occur in the GJFO planning area and they are found in Brush Creek, East Fork Brush Creek, West Fork Brush Creek (Buzzard Creek drainage), Carr Creek, Roan Creek, East Fork Big Creek, and Middle Fork Big Creek.

Past and Current Impacts
The introduction of non-native fish was a major factor in the decline of greenback cutthroat trout, primarily by salmonid species. Hybridization and competition has been documented across the species range; rainbow trout hybridize with native cutthroat trout and brook and brown trout tend to outcompete them in streams and rivers (USFWS 1998b).

Extirpation due to loss and degradation of habitat from mining, logging, grazing, and irrigation projects has also been documented (USFWS 1978).

Critical Habitat
Critical habitat has not been designated for the greenback cutthroat trout.

Threats
The primary threats to the greenback cutthroat trout are as follows (USFWS 1998b):

- Water diversions and reduced flows
- Livestock grazing
- Disease
- Toxicity
- Hybridization
- Competition with nonnative salmonids
- Overharvest
- Climate change
- Large wildfires

3.2.10 Mexican Spotted Owl

Species Description
Mexican spotted owls are identified by sight and sound. The spots of the Mexican spotted owl are larger and more numerous than in the other two subspecies, giving it a lighter appearance (USFWS 2012d). It is ashy-chestnut brown, with white and brown spots on its abdomen, back, and head; its brown tail is marked with thin white bands. The Mexican spotted owl is mottled, with irregular white and brown spots on its abdomen, back, and head. Young owls, less than five months old, have a downy appearance. Unlike most owls, spotted owls have dark eyes.

Females are larger than males (USFWS 2012d) and the sexes can be readily identified by voice. Juveniles, subadults, and adults can also be distinguished by plumage characteristics. It ranks among the largest owls in North America (USFWS 2014d).

Life History

The Mexican spotted owl is highly selective in roosting and nesting habitat, but it will forage in a wider array of habitats. Roosting and nesting habitat exhibit the following identifiable features:

- Large trees
- Uneven-aged tree stands
- Multistory canopy
- Tree canopy creating shade over 40 percent or more of the ground
- Standing dead trees

Canopy closure is typically mixed-conifer, dominated by Douglas fir, pine-oak, and riparian forests, with high tree diversity (USFWS 2012d).

Foraging habitat includes a wide variety of forest conditions, canyon bottoms, cliff faces, canyon rim tops, and riparian areas. It has been reported that Mexican spotted owls forage more frequently in unlogged forests than in managed forests. They eat a variety of prey, including small- to medium-sized rodents (such as wood rats, mice, and voles), bats, birds, lizards, snakes, and spiders (USFWS 2014d). The primary prey species are woodrats (*Neotoma* spp.), peromyscid mice (*Peromyscus* spp.) and microtine voles (*Microtus* spp.; USFWS 2014d).

Courtship begins in March and eggs are laid in late March or, more typically, early April. Nestling owls fledge from four to five weeks after hatching (commonly in early to mid-June). The young depend on their parents for food during the summer and will eventually disperse from the natal area in September and October (USFWS 2014d). Juvenile owls disperse into a variety of habitats ranging from high-elevation forests to pinyon-juniper woodlands and riparian areas surrounded by desert grasslands. Observations of long-distance dispersal by juveniles provide evidence that they use widely spaced islands of suitable habitat that are connected at lower elevations by pinyon-juniper and riparian forests.

As a result of these movement patterns, isolated populations may have genetic significance to the owl's conservation. Owls have been observed moving across open low desert landscapes between islands of suitable breeding habitat. It is likely that contiguous stands or islands of suitable mixed-conifer, pine-oak, and riparian forests are important (USFWS 2012d).

Status and Distribution

The Mexican spotted owl is a threatened species, listed on March 16, 1993 (58 FR 14248). A final rule designating critical habitat for the owl was published on June 6, 1995; this designation was successfully challenged in court (60 FR 29914). On August 31, 2004, the USFWS published a new final rule designating

critical habitat for the owl. Over 8.6 million acres of critical habitat is designated in Arizona, Colorado, New Mexico, and Utah (69 FR 53182).

A final recovery plan was published in September 2012 (USFWS 2012d) and replaces the previous plan dated October 16, 1995. The 1995 recovery plan subdivided the owl's range into 11 recovery units, six in the United States and five in Mexico. These were renamed in the September 2012 Final Recovery Plan as ecological management units, in accordance with current USFWS guidelines.

The Mexican spotted owl occurs in forested mountains and rocky canyonlands throughout the southwestern United States and Mexico (Gutierrez et al. 1995; Ward et al. 1995). It inhabits steep rocky canyons with exposed cliffs. It ranges from Utah, Colorado, Arizona, New Mexico, and the western portions of Texas, south into several states of Mexico. The Mexican spotted owl does not occur uniformly throughout its range but rather in disjointed areas that correspond with isolated mountain ranges and canyon systems. In the United States, most of the owls are found in national forests. In some areas of the Colorado Plateau Ecological Management Unit, owls are found only in rocky-canyon habitats, which primarily occur on US Forest Service, National Park Service, and BLM lands. In the United States, 91 percent of the owls known to exist between 1990 and 1993 occurred on lands administered by the US Forest Service, and 2 percent occurred on lands administered by the BLM (Ward et al. 1995).

The species' core range occurs in central Arizona and New Mexico. In Colorado, it occurs in lower-elevation forests, usually in deeply incised, rocky canyons in southern Colorado and along the Front Range.

Surveys conducted to locate spotted owls in northern Colorado near Fort Collins and Boulder, where historical records exist from the early 1970s and 1980s, have been unsuccessful. Surveys conducted in the Book Cliffs of east-central Utah, where owls were recorded in 1958, have also been unsuccessful (USFWS 2011b). When the species was listed as threatened in 1993, there were twenty historic records for Colorado, with occurrences ranging from the San Juan Mountains in southwestern Colorado and from the Front Range as far north as the vicinity of Denver (USFWS 1993).

Environmental Baseline

Occurrence in the Action Area

The Mexican spotted owl occurs in southwestern Colorado, but has never been recorded in the GJFO. Although potential habitat for the species does occur in the GJFO, the closest designated critical habitat for the species is approximately 30 miles southwest of the field office boundary in San Juan County, Utah. No known nests or Protected Activity Centers occur within the GJFO planning area.

Past and Current Impacts
The owl's extremely low numbers, exacting habitat requirements, and low productivity makes it susceptible to extirpation (CPW 2008).

Mexican spotted owls are especially threatened by habitat loss and disturbance from recreation (including birding), overgrazing, land and road development, catastrophic fire, timber harvest, and energy and mineral development. Historical and current uses of Mexican spotted owl habitat are both domestic and wild ungulate grazing, recreation, fuel reduction treatments, resource extraction (e.g., timber, oil, and gas), and development. These activities reduce the quality of Mexican spotted owl habitat (USFWS 1993). Currently the greatest threat to habitat is timber extraction in the southwestern United States.

Because the BLM believes that this subspecies does not currently exist in the GJFO planning area, it is likely not being impacted by any BLM actions in or adjacent the GJFO planning area. However, Mexican spotted owl surveys will be performed in areas of suitable habitat. In the event Mexican spotted owls are discovered in the GJFO planning area, measures would be adopted consistent with the current recovery plan to protect the species and its habitat. Stipulations (see Appendix B of the PRMP) will also be implemented in the event Mexican spotted owls are discovered in the GJFO planning area.

Critical Habitat
The USFWS first designated critical habitat for the Mexican spotted owl on February 1, 2001 (66 FR 8530). This designation was later revised and finalized on August 31, 2004 (69 FR 53182). There is no designated critical habitat in the GJFO planning area. Primary constituent elements for Mexican spotted owl critical habitat are described in **Table 3-4**, Primary Constituent Elements of Mexican Spotted Owl Critical Habitat.

Threats
In addition to habitat loss, the Mexican spotted owl is threatened by the following:

- Competition from other owl species
- Insects
- Overuse of habitat for commercial, recreational, scientific, or educational purposes
- Predation and disease
- Inadequacy of existing regulatory mechanisms
- Other natural or man-made factors, including fire (man-made or natural)
- Silvicultural treatments

- Intentional injury to the bird
- Climate change and noise disturbance
- Overgrazing
- Land and road development

Table 3-4
Primary Constituent Elements of Mexican Spotted Owl Critical Habitat

Features	Description
Forest structure	• A range of tree species, including mixed conifer, pine-oak, and riparian forest types, composed of different tree sizes reflecting different ages of trees, 30 to 45 percent of which are large trees with a trunk diameter of 12 inches (0.3 meters) or more when measured at 4.5 feet (1.4 meters) from the ground • A shade canopy created by the tree branches covering 40 percent or more of the ground • Large dead trees (snags) with a trunk diameter of at least 12 inches (0.3 meters) when measured at 4.5 feet (1.4 meters) from the ground
Maintenance of adequate prey species	• High volumes of fallen trees and other woody debris • A wide range of tree and plant species, including hardwoods • Adequate levels of residual plant cover to maintain fruits and seeds and to allow plant regeneration
Canyon habitats	• Presence of water (often providing cooler temperature and higher humidity than the surrounding areas) • Clumps or stringers of mixed conifer, pine-oak, pinyon-juniper, or riparian vegetation • Canyon wall containing crevices, ledges, or caves • High percent of ground litter and woody debris

Source: USFWS 2004b

3.2.11 Canada Lynx

Species Description

The Canada lynx is a medium-sized bob-tailed cat with long legs, large, well-furred paws, very long ear tufts, and a short, black-tipped tail. The winter pelage of the lynx is dense and has a grizzled appearance with grayish-brown mixed with buff or pale brown fur on the back, and grayish-white or buff-white fur on the belly, legs and feet. Summer pelage of the lynx is more reddish to gray-brown. They have large hind feet well adapted for moving across heavy snow. Adult males average 22 pounds (10 kilograms) in weight and almost 3 feet (0.9 meters) in length, with females being smaller, on average 19 pounds (8.6 kilograms) and slightly shorter in length. The lynx's long legs and large feet make it highly adapted for hunting in deep snow (USFWS 2014e).

Life History

The primary prey of the lynx is the snowshoe hare; their physical characteristics are highly specialized for this prey. In Colorado, their prey base includes small mammals such as other types of rabbits, squirrels, porcupine, beaver, and other rodents. Lynx also eat carrion (usually ungulates) and fish, and can capture ground-dwelling birds such as grouse (USFWS 2014e). This diversity in the diet of Colorado populations may make them more stable than those in Canada (National Wildlife Federation 2014). The typical hunting strategy is stalking prey or patient crouching in wait beside a trail followed by capture in a single bound.

Lynx are highly mobile and generally move long distances (greater than 60 miles [100 kilometers]). Lynx disperse primarily when snowshoe hare populations decline. Subadult lynx disperse even when prey is abundant, presumably to establish new home ranges (USFWS 2000). Individual lynx maintain large home ranges generally between 12 and 83 square miles (31 to 215 square kilometers). The size of lynx home ranges varies depending on abundance of prey, the animal's gender and age, season, and the density of lynx populations. When densities of snowshoe hares decline, for example, lynx enlarge their home ranges to obtain sufficient amounts of food to survive and reproduce. Lynx also make long-distance exploratory movements outside their home ranges (USFWS 2014e).

Lynx breed in late winter, and after a gestation period of about 9 weeks, females produce a litter of about four kittens in April or May. The male lynx does not assist with rearing young (USFWS 2014e). Yearling females may give birth during periods when hares are abundant. During periods of hare abundance in the northern boreal forest (taiga), litter size of adult females averages four to five kittens. Litter sizes are typically smaller in lynx populations in the contiguous US (USFWS 2014e).

Status and Distribution

The Canada lynx was listed as threatened throughout its range in the contiguous US under the ESA under a final rule published on March 24, 2000, and effective April 24, 2000 (65 FR 16053). A recovery plan outline was published on September 14, 2005 (USFWS 2005).

The distribution of lynx in North America is closely associated with the distribution of North American boreal forest and with snow conditions (USFWS 2005) since lynx are so highly adapted both morphologically and physiologically for hunting snowshoe hares and for surviving in areas with long, cold winters with deep, fluffy snow. In Canada and Alaska, lynx inhabit the classic boreal forest ecosystem known as the taiga. The range of lynx populations extends south from the classic boreal forest zone into the subalpine forest of the western United States, and the boreal/hardwood forest ecotone in the eastern United States. Forests with boreal features extend south into the contiguous United States along the North Cascade and Rocky Mountain Ranges in the west,

the western Great Lakes Region, and northern Maine in the east. Within these general forest types, lynx are most likely to be found in dense subalpine forest and willow-choked corridors along mountain streams and avalanche chutes, along with areas that receive deep snow (the likely location of its preferred prey species the snowshoe hare). Lynx are typically found in and have high-density populations of snowshoe hares (USFWS 2014e). Because of the patchiness and temporal nature of high quality snowshoe hare habitat, lynx populations require large boreal forest landscapes to ensure that sufficient high quality snowshoe hare habitat is available at any point in time and to ensure that lynx may move freely among patches of suitable habitat and among subpopulations of lynx (USFWS 2005).

Because the boreal forest landscape is patchy and transitional in the contiguous United States, snowshoe hare populations achieve lower densities compared to those of the expansive northern boreal forest in Canada. As a result, lynx generally occur at relatively low densities in the contiguous United States compared to the high lynx densities that occur in the northern boreal forest of Canada (USFWS 2005).

Lynx populations in the contiguous United States seem to be influenced by lynx population dynamics in Canada (USFWS 2014e). Many of these populations in Canada are directly interconnected to populations in the United States and are likely a source of emigration into contiguous United States lynx populations. Therefore connectivity with the larger lynx populations in Canada is important to ensuring long-term persistence of lynx populations in the United States (USFWS 2014e).

Environmental Baseline

Occurrence in the Action Area

In Colorado, lynx were virtually wiped out of the mountains in the early part of the twentieth century due to a variety of factors, including unregulated use of poisons, habitat destruction, and unregulated hunting. Evidence of individual animals continued to be noted in later years as scattered sightings in mountain areas. The last lynx sighting prior to recovery work in the 1990s occurred near Vail in 1973, although tracks unsubstantiated by biologists were reported there in 1991. A state-run reintroduction program begun in 1999 has restored the threatened cat to parts of its range as part of a design for the species' recovery in Colorado (CPW 2014).

Lynx analysis units have been mapped throughout the range of the species, and are intended to facilitate analysis and monitoring related to management actions on lynx habitat. These units do not depict actual lynx home ranges, but should approximate the size of a female's home range containing year-round habitat components (Interagency Lynx Biology Team 2013). Several lynx analysis units have been designated in the vicinity of Collbran; however, primary habitat for

the species occurs only in small pockets on high-elevation BLM lands, and suitable habitat within the planning area is limited. Canada Lynx have been recorded on US Forest Service-administered lands adjacent to the GJFO planning area.

Past and Current Impacts
The lynx population in the US is threatened by human alteration of forests, low numbers as a result of past overexploitation, expansion of the range of competitors, and elevated levels of human access into lynx habitat (USFWS 2009b).

Throughout its range, timber harvest, recreation, and their related activities, such as road construction, are the predominant land uses affecting lynx habitat. The primary listing factor was the lack of guidance for the conservation of lynx and snowshoe hare habitat in plans for federally managed lands. Landscape connectivity between lynx populations and habitats in Canada and the contiguous US is important to lynx success. Lynx movements may be negatively affected by high traffic volume on roads that bisect suitable lynx habitat, such as in the Southern Rockies, and in some areas, mortalities due to road kill are high (USFWS 2014e). Although the ESA bans the killing of lynx and requires road planners to consider lynx safety needs when planning new highways, immediate key threats to lynx recovery include road kill as well as illegal shooting.

Potential risk factors to lynx in the Southern Rockies include: conversion or alteration of native plant communities, fire suppression and hazardous fuels reductions, grazing, pre-commercial thinning, recreational uses, roads and trails, timber management, highways, predation, predator control, shooting and private land development (USFWS 2000).

Critical Habitat
The final rule designating critical habitat was published in the Federal Register on November 9, 2006 (71 FR 66008) and did not include lands in Colorado. In February 2008 the USFWS proposed to revise the amount of critical habitat designated under the ESA (73 FR 10860). The USFWS designated Critical Habitat for the Canada lynx on February 25, 2009 (74 FR 8616). On September 25, 2013, the USFWS announced a proposal to revise the critical habitat designation once again (78 FR 59429) as a result of two court orders from litigation over the 2009 critical habitat designation. No proposed critical habitat occurs within the GJFO planning area.

Primary constituent elements of Canada lynx critical habitat is described in **Table 3-5,** Primary Constituent Elements of Canada Lynx Critical Habitat.

Table 3-5
Primary Constituent Element of Canada Lynx Critical Habitat

Features	Description
Boreal forest landscapes supporting a mosaic of differing successional forest stages	• Presence of snowshoe hares and their preferred habitat conditions, which include dense understories of young trees, shrubs or overhanging boughs that protrude above the snow, and mature multistoried stands with conifer boughs touching the snow surface • Winter snow conditions that are generally deep and fluffy for extended periods of time; • Sites for denning that have abundant coarse woody debris, such as downed trees and root wads. • Matrix habitat (e.g., hardwood forest, dry forest, non-forest, or other habitat types that do not support snowshoe hares) that occurs between patches of boreal forest in close juxtaposition (at the scale of a lynx home range) such that lynx are likely to travel through such habitat while accessing patches of boreal forest within a home range.

Source: USFWS 2009b

Threats

Threats to Canada lynx, which are described in more detail under Environmental Baseline, include:

- Human alteration of forests
- Low numbers as a result of past overexploitation
- Expansion of the range of competitors
- Elevated levels of human access into lynx habitat
- Road kill
- Illegal shooting
- Global warming

3.2.12 Western Yellow-Billed Cuckoo

Species Description

The western yellow-billed cuckoo is brownish above and white below, with rust-colored flight feathers. The species has a slender long-tailed profile, with a fairly stout and slightly down-curved bill; the upper mandible is blue-black and the lower is yellow. The underside of the tail has pairs of large white spots.

This is a medium-sized bird of about 12 inches in length weighing about 2 ounces. The tail feathers are boldly patterned with black and white below. The legs are short and bluish-gray; adults have a narrow yellow eye ring. Juveniles resemble adults, except the tail patterning is less distinct and the lower bill may have little or no yellow. Males and females differ slightly. Males tend to have a slightly larger bill, and the white in the tail tends to form oval spots; in females the white spots tend to be connected and less distinct (USFWS 2011c).

Life History

Western yellow-billed cuckoos breed in large blocks of riparian habitats, particularly woodlands with cottonwoods (*Populus* spp.) and willows (*Salix* spp.). Dense understory foliage appears to be an important factor in nest site selection, while cottonwood trees are an important foraging habitat in areas where the species has been studied in California (USFWS 2014f).

Clutch size is usually two or three eggs, and development of the young is rapid: 17 days from egg-laying to fledging. Although yellow-billed cuckoos usually raise their own young, they are discretionary brood parasites, occasionally laying eggs in the nests of other yellow-billed cuckoos or other bird species (USFWS 2011c).

Western yellow-billed cuckoos winter in South America. Unlike other insectivorous birds, with the possible exception of some raptors, they feed on larger insects (Laymon 1998). Yellow-billed cuckoos are primarily foliage gleaners, though they can catch flying prey or drop to the ground to catch grasshoppers or tree frogs.

Status and Distribution

The western yellow-billed cuckoo is a threatened species under the ESA. Those that occur in the western United States are a distinct population segment (USFWS 2014i).

This species historically occurred in portions of western Colorado, although it was likely never common. It is now extremely rare and is an uncommon summer resident. The available data indicate that cuckoos do not nest in this broad highlands region and there are few records of cuckoos in the mountainous region of the state (USFWS 2013c).

Since 2000, detections of the western yellow-billed cuckoo Distinct Population Segment have been limited in western Colorado, where consistent observations have been recorded at only two locations. The species has been detected annually in the San Luis Valley of south-central Colorado since 2001, specifically in Conejos County, where breeding is suspected but not confirmed (USFWS 2011c). Since 2003 the species has also been detected annually at the North Fork of the Gunnison River Valley of west-central Colorado in Delta County; breeding was confirmed in 2008 near Hotchkiss (USFWS 2011c).

Reports of single yellow-billed cuckoos have come primarily from the Grand Junction area and Mesa County in 2001, 2002, 2005, 2008, 2011, and 2014 with a report of more than one cuckoo at Orchard Mesa Wildlife Area in 2006 (USFWS 2013c). Additional reports are as follows:

- A cuckoo south of Montrose in Montrose County near the Uncompahgre River in 2009 (USFWS 2013c)

- A cuckoo along the Gunnison River near Gunnison in 2007 (USFWS 2013c)
- A cuckoo in the Grand Junction Wildlife Area, along the Gunnison River near the confluence of the Colorado River on July 5, 2013 (John Toolen, personal communication, September 4, 2014)
- Detections by the Rocky Mountain Bird Observatory along the Yampa River near Craig in 2007 and 2008 and in far western Colorado near Nucla in 2005 and 2008 (USFWS 2013c)
- A cuckoo sighted at the Bishop State Wildlife Area (south of the Colorado River near Palisade) by a FWS employee on July 1, 2014 (John Toolen, personal communication, September 4, 2014)
- A cuckoo sighted by a FWS employee at May Flats, near the Utah and Colorado border.

Environmental Baseline

Occurrence in the Action Area

Suitable western yellow-billed cuckoo habitat occurs along the Colorado, Gunnison, and Dolores Rivers within the GJFO planning area. Observations have been reported within the planning area near Palisade and near the confluence of the Colorado and Gunnison Rivers (John Toolen, Personal communication). However, the species is difficult to detect and may migrate through the area or remain in suitable cottonwood habitat in the GJFO planning area.

Past and Current Impacts

Western yellow-billed cuckoos have undergone catastrophic declines especially in western Colorado (Wiggins 2005). Direct loss and degradation of low-elevation riparian woodland habitats are considered a primary cause for declines in the western portion of their range.

Available breeding habitat for cuckoos has been substantially reduced in both area and quality. The causes are groundwater pumping and invasive nonnative plants, particularly tamarisk, replacing native riparian habitats (USFWS 2011c).

Most of the habitat for the cuckoo is on private lands and continues to be lost or significantly altered. The threats affecting the species and its habitat are ongoing; riparian habitat is continuing to be destroyed through land use conversion and grazing (Laymon 1998; Wiggins 2005; USFWS 2011c; USFWS 2014i).

Critical Habitat

Proposed critical habitat for the western yellow-billed cuckoo was designated in 2014 (USFWS 2014h), and includes portions of the planning area. The USFWS proposed designating 80 CHUs throughout the range of the species. Of these, one unit is located within the planning area along the Colorado River (CHU

Unit 55: CO-2). This unit encompasses 4,002 acres, of which is entirely located within the boundaries of the planning area.

Primary constituent elements for the yellow-billed cuckoo proposed critical habitat, are described in **Table 3-6**, Primary Constituent Elements of Yellow-Billed Cuckoo Proposed Critical Habitat.

Table 3-6
Primary Constituent Elements of Yellow-Billed Cuckoo Proposed Critical Habitat

Features	Description
Riparian Woodlands	• Riparian woodlands with mixed willow-cottonwood vegetation, mesquite-thorn-forest vegetation, or a combination of these that contain habitat for nesting and foraging in contiguous or nearly contiguous patches that are greater than 325 feet (100 meters) in width and 200 acres or more in extent. These habitat patches contain one or more nesting groves, which are generally willow-dominated, have above average canopy closure (greater than 70 percent), and have a cooler, more humid environment than the surrounding riparian and upland habitats.
Adequate Prey Base	• Presence of a prey base consisting of large insect fauna (for example, cicadas, caterpillars, katydids, grasshoppers large beetles, dragonflies) and tree frogs for adults and young in breeding areas during the nesting season and in post-breeding dispersal areas.
Dynamic Riverine Processes	• River systems that are dynamic and provide hydrologic processes that encourage sediment movement and deposits that allow seedling germination and promote plant growth, maintenance, health, and vigor (e.g. lower gradient streams and broad floodplains, elevated subsurface groundwater table, and perennial rivers and streams). This allows habitat to regenerate at regular intervals, leading to riparian vegetation with variously aged patches from young to old.

Source: USFWS 2014h

Threats

The primary threats to western yellow-billed cuckoo as described in the Threatened Status Final Rule (USFWS 2014i) are loss and degradation of low-elevation riparian woodland habitats from the following:

- Habitat loss from dams and alterations of hydrology
- Surface and ground water diversion
- Encroachment of levees and flood control and bank stabilization structures into the river channel and floodplain
- Transportation systems
- Gravel mining
- Habitat loss and degradation from agricultural activities
- Habitat loss and degradation due to conversion to nonnative vegetation
- Environmental impacts of cross border foot traffic in the southwest
- Climate change

Threats to proposed critical habitat as described in the Designation of Critical Habitat Proposed Rule (USFWS 2014h) include the following:

- Disruption of hydrological processes that are necessary to maintain a healthy riparian system
- Loss of riparian habitat regeneration caused by poorly managed grazing
- Loss of riparian habitat from development activities and extractive uses
- Degradation of riparian habitat as a result of expansion of nonnative vegetation
- Destruction of riparian habitat by uncontrolled wildfires
- Reduction of prey insect abundance by the application of pesticides

The loss of forested habitat on its wintering grounds in South America is also a substantial threat (Wiggins 2005).

3.3 PROPOSED SPECIES

3.3.1 Gunnison Sage-Grouse

Species Description

The Gunnison Sage-Grouse is a large, rounded-winged, ground-dwelling bird, up to 20 inches long and 18 inches (46 to 51 centimeters) tall, weighing from two to four pounds. It is about one-third the size of the Greater Sage-Grouse (*Centrocercus urophasianus*). The birds are found at elevations ranging from 4,000 to over 9,000 feet (1,220 to 2,740 meters) and are highly dependent on sagebrush for cover and food. Sage-Grouse require wide expanses of sagebrush, and the mere presence of sagebrush in small patches does not indicate that an area is suitable Sage-Grouse habitat (USFWS 2010c).

Life History

Sage-Grouse is a sage obligate species; it requires healthy, functioning sage ecosystems for year-round survival. Due to high levels of natural variation in sagebrush habitat composition, sage-grouse are adapted to a variety of habitats to support their annual cycle. While most Sage-Grouse do not migrate, some can move great distances to meet their dietary requirements and find their diverse seasonal habitats (Piñon Mesa Gunnison Sage Grouse Partnership 2000).

Adult Gunnison Sage-Grouse eat leafy vegetation and will also eat insects in summer. Although sage leaves are their preferred food, grouse will also eat succulent forbs in summer. The winter diet is completely sage based, requiring that some plants in winter habitat reach above the snow. Chicks consume insects and some forbs during brood rearing, and their diet shifts to sage in fall (Piñon Mesa Gunnison Sage Grouse Partnership 2000).

Status and Distribution

In January, 2013, the USFWS proposed to protect the Gunnison Sage-Grouse as an endangered species (USFWS 2013d). A final determination on the species is expected in November of 2014.

Historically, Gunnison Sage-Grouse were found in the southwestern portion of Colorado, southeastern Utah, northeastern Arizona, and northwestern New Mexico. Currently, approximately 5,000 breeding Gunnison Sage-Grouse occur among seven separate populations in southwest Colorado and southeast Utah. The largest population—about 4,000 birds—inhabits the Gunnison Basin. The separate populations in Colorado are Piñon Mesa, Crawford, San Miguel Basin, Gunnison Basin, Dove Creek, Cerro Summit-Cimarron-Simo Mesa, and Poncha Pass. The Utah population is near Monticello (USFWS 2010c).

Environmental Baseline

Occurrence in the Action Area

The Piñon Mesa population of Gunnison Sage-Grouse occurs entirely within the GJFO planning area in the Glade Park area. Historically, leks occurred on BLM-administered lands; however, currently the birds primarily use private land in the southwest corner of Glade Park. The CPW began augmenting this population in 2010, however immediate results of increased males in lek counts were not observed as males at leks dropped to 11 in 2012 but jumped to 31 in 2013. The large jump is partly due to finding a new lek with 8 birds on it but also to increased overall numbers that may be attributable to the transplant efforts. See **Table 3-7**, For Piñon Mesa Lek count information. A conservation plan for this population was completed in 2000 (Piñon Mesa Gunnison Sage-Grouse Partnership 2000), and a rangewide conservation plan for the species was completed in 2005 (Gunnison Sage-Grouse Rangewide Steering Committee 2005). The BLM has been actively managing public lands in the Glade Park area to improve Gunnison Sage-Grouse habitat through mechanical treatments and prescribed fire.

Table 3-7
Lek Count Piñon Mesa Population

Year	High Count Males on Lek
1995	16
1996	24
1997	23
1998	26
1999	29
2000	33
2001	31
2002	27
2003	25
2004	29

Table 3-7
Lek Count Piñon Mesa Population

Year	High Count Males on Lek
2005	34
2006	33
2007	26
2008	22
2009	16
2010	15
2011	13
2012	11
2013	31

[2]Source: CPW 2011

Critical Habitat

Proposed critical habitat for the Gunnison Sage-Grouse is located within the southwestern portion of the planning area near Glade Park.

Primary constituent elements for the Gunnison Sage-Grouse proposed critical habitat, are described in **Table 3-8**, Primary Constituent Elements of Gunnison Sage-Grouse Proposed Critical Habitat.

Table 3-8
Primary Constituent Elements of Gunnison Sage-Grouse Proposed Critical Habitat

Features	Description
Sagebrush plant communities	• Areas with vegetation composed primarily of sagebrush plant communities (at least 25 percent of primarily sagebrush land covered within a 1.5-km (0.9-mile) radius of any given location), of sufficient size and configuration to encompass all seasonal habitats for a given population of Gunnison sage-grouse, and facilitate movements within and among populations. • Breeding habitat and summer-late fall habitat composed of sagebrush plant communities with structural characteristics within the ranges as described in the proposed critical habitat rule (USFWS 2013e) • Winter habitat composed of sagebrush plant communities with sagebrush canopy cover between 20 and 40 percent and sagebrush height of 40 to 55 cm (15.8 to 21.7 inches). These habitat structure values are average values over a project area. • Alternative mesic habitats used primarily in the summer-late-fall season

USFWS 2013e

Threats

Factors affecting the continued existence of Gunnison Sage-Grouse include habitat fragmentation and severe weather during the nesting and early brood periods (Piñon Mesa Gunnison Sage Grouse Partnership 2000). Fire suppression also leads to changes in habitat from encroaching conifers and sagebrush habitat types becoming dominant old-aged stands. Other anthropogenic factors that affect sage-grouse are as follows (Piñon Mesa Gunnison Sage Grouse Partnership 2000):

- Continuous noise that impairs the acoustical components of males on leks
- Disturbance from construction or other projects
- Harassment from pets
- Disturbance, death, or habitat degradation from use of off-highway-vehicles

Specific threats as identified in the 2013 proposed listing for all populations of Gunnison Sage-Grouse (not just those which occur within the planning area) include: residential development, roads, powerlines, domestic grazing and wild ungulate herbivory, fences, invasive plants, fire, climate change, renewable energy development, nonrenewable energy development, pinyon-juniper encroachment, conversion to agriculture, and water development (USFWS 2013d).

3.4 CANDIDATE SPECIES

3.4.1 Greater Sage-grouse

The Greater Sage-grouse is a candidate for listing under the ESA and is considered in this BA for long-term planning purposes. The Greater Sage-Grouse is not considered part of the formal Section 7 ESA consultation; however, it is possible that it could be listed during the life of the RMP.

Greater Sage-Grouse do occur within the planning area. Conserving this species and its required habitat are key components of current, proposed, and future BLM goals, objectives, and management actions.

Species Description

The Greater Sage-Grouse is the largest grouse in North America (USFWS 2014g). This grouse is a large, rounded-winged, ground-dwelling bird, up to 30 inches long and two feet tall, weighing from two to seven pounds. It has a long, pointed tail with legs feathered to the base of the toes. Females are a mottled brown, black, and white. Males are larger and often weigh in excess of 4-5 pounds and hens weigh in at 2-3 pounds. Males have a large white ruff around their neck which conceal 2 large, bright, yellow-green skin sacs on their breasts which are used in courtship displays. These air sacks get inflated during mating displays. Both sexes have narrow, pointed tail feathers. Males also have yellow eyecombs (obvious in the spring during courtship displays). Female Sage-Grouse do not have these specialized structures used for courtship displays and otherwise resemble males in coloration. However, in comparison to males, their throats are buffy with blackish markings and the lower throat and breast are barred which presents a blackish-brown appearance. Immature birds (less than 1 yr. of age) can be distinguished from adults by their light yellowish green toes (adults have dark green toes).

Life History

Sage-Grouse require a diverse age-class of sagebrush and open grassland habitats. The birds rely on sagebrush for roosting, cover, and food. They are usually referred to as "sagebrush obligates," meaning that the birds cannot survive without sagebrush (Knick and Connelly 2011). Populations of sage-grouse may have distinct seasonal habitats or well-integrated seasonal habitats, depending upon if they are migratory or non-migratory populations. Sage-Grouse require different habitats for breeding, nesting, brood-rearing, and for winter survival. In general breeding occurs in open areas surrounded by sagebrush. For nesting, Sage-Grouse use areas of sagebrush with a canopy cover of 15 to 25 percent but can be as high as 30 to 40 percent, and a grass and forbs understory. For brood-rearing habitat, open stands of sagebrush (10 to 25 percent canopy cover) are preferable. Winter habitat consists of sagebrush areas with canopy cover of 10 to 30 percent (Knick and Connelly 2011).

Each year, male Sage-Grouse congregate in late winter through spring on leks to display their breeding plumage and to attract hens for mating. A lek is a traditional display area where two or more male Sage-Grouse have attended in 2 or more of the previous 5 years. The area is normally located in a very open site in or adjacent to sagebrush-dominated habitats. Generally, lek sites are traditional, with the same lek sites used year after year. Taller sagebrush on the outskirts of the leks is necessary as a food source, escape cover, nesting cover for females, and loafing cover during the day. Leks generally occur in sagebrush habitats on slopes (less than 15 per cent) with a south- to east-facing aspect (BLM 2004). Because leks are typically positioned within proximity of nesting and brood-rearing habitat, they are often considered an excellent reference point for monitoring and habitat protection measures.

Status and Distribution

The Greater Sage-Grouse is a federal candidate species for listing under the ESA, Colorado BLM sensitive species, and a Colorado species of concern. Considerable attention has been given to this species since the 1980s, as evidenced by the BLM's National Greater Sage-Grouse Planning Strategy.

The BLM is currently working on an EIS to analyze incorporating new Greater Sage-Grouse conservation measures into its RMPs for the five field offices within the Northwest Colorado District: the GJFO, the Colorado River Valley Field Office, the Kremmling Field Office, the Little Snake Field Office, and the White River Field Office. All five field offices in the District are either in an on-going land-use planning effort or have recently completed one. An interagency National Technical Team drafted conservation measures for the BLM's consideration during the planning process. The BLM is evaluating where the Greater Sage-Grouse conservation measures in each field offices' plans are consistent with these recommendations, and where BLM may need to consider Plan Amendments through the Sage-Grouse EIS.

The birds are found at elevations ranging from 4,000 to over 9,000 feet (1,220 to 2,750 meters) and are highly dependent on sagebrush for cover and food. They cannot survive in areas where sagebrush does not exist (UFWS 2014i). They are currently found in 11 states: California, Colorado, Idaho, Montana, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming. They also occur in the Canadian provinces of Alberta and Saskatchewan. They are native to the sagebrush steppe of western North America. Their distribution closely follows that of sagebrush, particularly big sagebrush (*Artemesia tridentata* subspecies) (USFWS 2014g).

Environmental Baseline

Occurrence in the Action Area

The Parachute-Piceance-Roan (PPR) population of the Greater Sage-Grouse occurs on the northeastern side of the GJFO planning area. The Colorado Greater Sage-Grouse Conservation Plan (Colorado Greater Sage-Grouse Steering Committee 2008) shows a larger portion of the GJFO planning area as potential pre-settlement habitat based on historic sagebrush distribution, encompassing everything above the Book Cliffs and portions of the Grand Mesa slopes (though the plan identifies this as an area where the species of sage-grouse is uncertain). Sixteen active and inactive Greater Sage-Grouse leks occur within the GJFO planning area; three occur on BLM-administered lands, and thirteen occur on private lands. Of these sixteen leks, seven are considered active; two of the active leks occur on BLM-administered lands. 49,300 acres of Preliminary Priority Habitat (PPH), and 29,300 acres of Preliminary General Habitat (PGH) occur within the planning area.

Past and Current Impacts

Habitat loss and degradation are the greatest concern related to Greater Sage-Grouse. Sagebrush habitats are becoming increasingly degraded and fragmented due to the impacts of multiple threats, including direct conversion, urbanization, infrastructure such as roads and power lines built in support of several activities, wildfire and the change in wildfire frequency, incursion of invasive plants, grazing, and nonrenewable and renewable energy development. Many of these threat factors are exacerbated by the effects of climate change, which may influence long-term habitat trends (Manier et al. 2013).

Agricultural conversion has resulted in large losses of sagebrush shrubsteppe habitats. Sagebrush habitat continues to be converted for both dryland and irrigated crop production. In some Colorado counties, fifty percent of sage-grouse habitat has been subdivided, while an estimated 3 to 5 percent of all historical habitat in Colorado has been converted into urban areas (USFWS 2010b). The construction of power lines, communication towers, fences, roads, and railroads has contributed to habitat fragmentation and degradation. Greater Sage-Grouse populations are also negatively affected by energy development

activities (primarily oil, gas, and coal-bed methane). Wildfires can result in the short or long-term loss of habitat (USFWS 2010b).

Livestock management and domestic grazing can seriously degrade Sage-Grouse habitat. Grazing can adversely impact nesting and brood-rearing habitat by decreasing vegetation concealment from predators. Grazing also has been shown to compact soils, decrease herbaceous abundance, increase erosion, and increase the probability of invasion of exotic plant species (USFWS 2010b).

Human recreation produces some threats to Greater Sage-Grouse, including from bird watching or tour groups visiting leks, impacts from general wildlife viewing, and/or photography. Also this species, the subject of many scientific research studies and field studies, can include capture, handling, subsequent banding, or banding and radio-tagging of Sage-Grouse, all of which can contribute directly or indirectly to increases in mortality rates. Finally, Greater Sage-Grouse are hosts for a variety parasites and diseases which can increase mortality rates, and predation is the most commonly identified cause of direct mortality for Sage-Grouse during all life stages (USFWS 2010b).

The BLM is currently operating under Instruction Memorandum 2012-043 – Greater Sage-Grouse Interim Management Policies and Procedures (BLM 2012f). This Instruction Memorandum provides interim conservation policies and procedures to be applied to ongoing and proposed authorizations and activities that affect the Greater Sage-Grouse and its habitat. This direction ensures that interim conservation policies and procedures are implemented when field offices authorize or carry out activities on public land while the BLM develops and decides how to best incorporate long-term conservation measures for Greater Sage-Grouse into applicable land use plans. This direction aims to promote sustainable Greater Sage-Grouse populations and conservation of its habitat while not closing any future options before the planning process can be completed.

Threats

The primary threats to the Greater Sage-Grouse, described in more detail under the Environmental Baseline, include:

- Agriculture conversion and urbanization
- Fire
- Invasive species
- Infrastructure development
- Recreation
- Livestock use and grazing
- Energy development

SECTION 4
EFFECTS OF PROPOSED ACTION

4.1 INTRODUCTION

This BA analyzes the impacts of a proposed discretionary federal action. A federal action is defined as anything authorized, funded, or carried out by a federal agency. The analysis of all impacts includes the effects of interrelated and interdependent actions. The proposed action is to implement the PRMP as described in Section 2. The proposed action is programmatic in nature, and as such, projects implemented under the jurisdiction of this RMP would be subject to Section 7 ESA consultation at the project-specific level.

4.1.1 Definitions

The effects of implementing the PRMP can be categorized into direct, indirect, and cumulative effects. These categories are defined differently under the ESA and NEPA, so that effects presented here will differ from those described in the RMP/EIS.

- **Direct effects** are those that are caused by the proposed action and occur at the time of the action.
- **Indirect effects** are those that are caused by the proposed action and occur later in time but are reasonably certain to occur.
- **Cumulative effects** include those of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this BA. Future federal actions that are unrelated to the proposed action are not considered in cumulative analysis. This is because they will be subject to separate consultation, in accordance with Section 7 of the ESA.

The following definitions are used for effect determinations:

- **No effect**—This is the appropriate conclusion when the BLM determines its proposed action would not affect listed species. The

principal factor in this determination is that the species and its suitable habitat do not exist in the analysis area or that the proposed action would involve no surface disturbances or other disruption to the species. In this situation, no further contact with the USFWS is required.

- **May affect, is not likely to adversely affect**—This is the appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. This type of effect requires informal Section 7 consultation with the USFWS and concurrence with the determination.
- **May affect, is likely to adversely affect—**This is the appropriate conclusion if any adverse effect on the listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. If the overall effect of the proposed action is beneficial to the listed species, but also is likely to cause some adverse effects, the proper effect determination for the proposed action is "likely to adversely affect" the listed species. Such determination requires formal Section 7 consultation with the USFWS.

4.1.2 Methods of Analysis

Although data on known locations and habitats in the planning area are available, the data are neither complete nor comprehensive. Known and potential species and habitat locations were considered in the analysis; however, the potential for species to occur outside these areas was also considered. Impacts were quantified when possible. In the absence of quantitative data, best professional judgment based on scientific reasoning was used. Additionally, The GJFO RMP and this associated BA are programmatic documents, which do not address site-specific proposals or projects. As a result, some impacts are discussed in more general terms.

No decision would be approved in the RMP or authorized on BLM lands that would jeopardize the continued existence of species that are listed, proposed, or candidates for listing as threatened or endangered. Implementation of the BLM's special status species program is directed at preventing the need for listing of proposed or candidate species under the ESA, protecting special status species, and improving their habitats to a point where their special status recognition is no longer warranted (BLM 2008c).

The analysis is based on the following assumptions:

- Impacts on listed, proposed and candidate species can occur from actions that result in direct mortality, loss of habitat or modifications to habitat suitability, and actions that displace individuals or disrupt behavior. Because threatened, endangered,

proposed, and candidate species have specific habitat requirements, and their habitats are often diminishing, disturbance of the species or their habitat could result in population declines, which could adversely affect viability of local populations.

- Since threatened and endangered species populations are, by their nature, generally small and localized, the total area affected by other activities or restrictions is less important than where the activities or restrictions occur in relation to special status species and their habitat.
- The health of threatened, endangered, proposed and candidate species populations is directly related to the overall health and functional capabilities of upland, aquatic, riparian, and wetland resources, which in turn are a reflection of overall watershed health.
- Ground-disturbing activities could lead to positive or negative modification of habitat and loss or gain of individuals. This depends on the nature of the activity, the intensity of the surface disturbance, the amount of area disturbed, the location of the disturbance, and the species affected.
- Road density in a given watershed and the distance of roads from threatened, endangered, proposed, and candidate species habitat provides an indication of the potential for impacts on these species. For fish and aquatic wildlife, roads are a measure of lands available for accelerated water transport and potential erosion and offsite sediment transport. For plants, roads also contribute to increasing exposure to dust, reducing pollinator habitat, and providing a niche for the invasion of noxious weeds. However, the actual impacts and degree of impacts depend on additional variables, such as the class of road (dirt, gravel, paved), road condition (rutted, bar ditched, properly drained), the type of vegetation between the road and occupied or suitable habitat, the topography, the ecological condition of the suitable or occupied habitat, and soil characteristics.
- Species' health, population levels, and habitat conditions fluctuate in response to natural factors. Periods of drought or excessive moisture and outbreaks of diseases that affect species directly or impact habitat (e.g., Ips beetle) would likely impact threatened, endangered, proposed, and candidate species population levels.
- Implementation-level actions would be further assessed on an appropriate spatial and temporal scale. Additional field inventories would likely be needed to determine whether any such species could be present in the project area.

- Land uses would be managed to maintain or move toward meeting the Colorado Standards for Public Land Health (BLM 1997) on a landscape basis. Site-specific NEPA and ESA analysis would assess whether management actions would contribute to the maintenance or achievement of land health standards or risk causing a decline in land health conditions.
- All permitted activities that could affect federally threatened or endangered species would be required to undergo ESA Section 7 consultation with the USFWS. The activities would need to be mitigated to ensure that threatened or endangered species would not be jeopardized on a project-specific basis or at a cumulative level.
- The BLM would implement measures to conserve BLM sensitive species and their habitats to reduce the likelihood and need for such species to become listed (BLM 2008c).
- The BLM would implement the standard operating procedures and mitigation measures from the Programmatic Integrated Weed Management Plan for the BLM Grand Junction Field Office BA (BLM 2010b). These would mitigate the potential impacts from herbicide treatments.
- Success of mitigation depends on the specific protective measures employed and the assumption that these measures would be properly implemented. Adaptive management, such as changing techniques, would be used until success is achieved.
- Many of the resources and uses have NSO or CSU stipulations that extend beyond or overlap the NSO or CSU stipulations listed for protection of special status species. Although NSO or CSU stipulations for other resources and uses may offer additional benefits (e.g., reduced erosion, sedimentation, and weed invasion) and indirectly support special status species management, in most cases, these benefits would be negligible or redundant to the protections provided by stipulations for special status species. For these reasons, impacts on special status species from NSO or CSU stipulations associated with other resources will only be addressed if they are anticipated to provide substantial additional protection.

4.2 LISTED SPECIES

4.2.1 Plants

Assumptions and Methods of Analysis

Methods of analysis and assumptions are similar to those described above in Section 4.1.2. The following additional assumptions apply to listed plants:

Any disturbance of listed plant habitat, unless specifically designed for a particular listed plant species, would be detrimental to the listed plants. This includes sagebrush habitat improvement projects, such as juniper removal and prescribed fire. These projects might have long-term positive impacts but would result in listed plant mortality and habitat degradation in the short term.

Actions that affect listed plant species can result in the following general impacts:

- **Direct mortality.** Mortality can result from crushing, trampling, or physically removing plants. Contact with herbicides or other chemicals, can also cause direct mortality. Where occurrences of a plant are small, loss of a portion of the plants can compromise its viability. Loss of occurrences can compromise species viability due to reduced genetic diversity and a reduced ability to withstand natural or man-made disturbances.
- **Loss of vigor or reduced reproductive success.** Trampling and coming in contact with chemicals may not always result in direct mortality; however, it can reduce vigor, which affects the plant's ability to reproduce and sustain the population. The consumption of flowers, seeds, stems, and foliage of special status plants (herbivory) can reduce reproductive success, or in some cases, death. Dust deposited on special status plants may reduce their photosynthetic ability or the ability of pollinators to transfer pollen between plants.
- **Direct loss of potential or occupied habitat.** Direct habitat loss results when habitat is physically destroyed or converted to a form that is unsuitable for the impacted species. Direct habitat loss can be short term or permanent. Surface-disturbing activities, such as construction and use of roads, trails, parking lots, buildings, power poles, wind turbines, and ponds, may result in permanent loss of occupied or potentially occupied habitat. This would reduce the total habitat capable of supporting listed plant populations and fragment remaining populations.

  Short-term habitat loss can occur with habitat improvement projects, such as those addressing encroaching junipers in sagebrush or salt desert shrub habitats. Closure or reclamation of disturbed areas may eventually restore lost habitat; however, the disturbance can require years or decades for recovery to conditions before the disturbance. If reclamation does not result in habitat suitable for sustaining special status plants, habitat may be permanently lost.
- **Changes in habitat structure.** A canopy cover of shrubs offers habitat characteristics that appear to be favorable for several special status plant species, such as Colorado hookless cactus, to germinate and become established. Shrubs may protect some special status

plants from herbivory or trampling and may provide improved moisture availability or reduced moisture loss under the canopy. Surface-disturbing activities that significantly reduce the percent canopy cover of shrubs may allow increased herbivory or moisture loss, resulting in decreased vigor or mortality of special status plants.

- **Competition.** Changes in species composition also affect listed plant populations. Proliferation of noxious weeds or other invasive plants may render habitat unsuitable by outcompeting listed plants for water and nutrients or by preventing seedling germination and establishment. Occupied Colorado hookless cactus habitat that is dominated by cheatgrass appears to inhibit seedling cactus to germinate, thereby threatening the long-term viability of this population. In some cases, increases in canopy cover and density of native species, particularly grasses, can compete with listed plants for limited water and nutrients.

  Other species, such as Parachute penstemon, and DeBeque phacelia thrive in environments where vegetation is sparse and competition is low. Increases in vegetation cover (following disturbances, such as fire or seeding) may cause competition with special status plants, resulting in decreased vigor or mortality.

- Other species thrive in environments where vegetation is sparse and competition is low. Increases in vegetation cover, following such disturbances as fire, mechanical treatments, or seeding, may cause competition with special status plants, resulting in decreased vigor or mortality.

- **Loss of pollinators or pollinator habitat.** Actions that disturb pollinators or that destroy their habitat can have a detrimental impact on plant species. Long-term loss of pollinators can reduce the reproductive ability of these plant species and affect maintenance and genetic diversity of populations.

- **Habitat fragmentation.** Habitat becomes fragmented when contiguous habitat is broken into smaller blocks by surface-disturbing activities and distances between suitable habitat patches increase. Because pollinators fly only limited distances, they are less likely to use small and isolated patches of habitat. Habitat fragmentation can effectively isolate pollinators from special status plants. Smaller populations receive fewer pollinator visits, so seed production is lower in small populations.

  Small population size decreases reproductive success and increases inbreeding and loss of genetic variation. As a result, fragmentation may lower population viability and increase local population extinction risk (Kolb 2008). Herbivory does not decrease with

population size; instead, it enforces fragmentation by further reducing the number of flowering individuals (Kolb 2008). Closure and rehabilitation of roads in listed plant habitat may benefit the long-term survival of populations by decreasing habitat fragmentation.

- **Soil compaction.** Soil compaction resulting from heavy equipment or vehicle travel may reduce soil pore size, inhibit water infiltration, and restrict root penetration, thereby inhibiting maintenance and establishment of special status plants.
- **Erosion or sedimentation.** Special status plants may be washed away or their roots may be exposed by erosion from surface-disturbing activities, such as blading or bulldozing for roads. Special status plants may be buried by sedimentation resulting from disturbances upslope of special status plant populations.
- **Alteration of hydrologic conditions.** Some special status plant species (such as Ute ladies'-tresses orchid), which are dependent on seasonally flooded environments, subirrigated soils, or seeps, may be adversely affected by changes in surface or groundwater flow.
- **Changes in fire regime.** Changes in species composition, either in special status plant habitat or in adjacent plant communities, may alter the natural fire regime to which the plants are adapted. Cheatgrass, a highly flammable annual grass, may drastically increase the fire frequency in special status plant habitat, affecting the survivability and viability of the population.
- **Habitat restoration.** This can result from vegetation management projects, hydrologic function restoration, invasive species removal, historic fire regimes restoration, grazing management alteration, or other methods. However, any habitat restoration project for special status plants must be designed specifically for the individual plant species and its specific habitat and site conditions. Generalized habitat restoration projects that do not focus on special status plant needs can have negative effects on these species.

Conservation Planning (Section 7 [a][1] of the ESA)

The goals for biological resources management, including ESA-listed species, in the PRMP are summarized in **Table 2-1** of this BA. Additionally, **Table 2-1** includes the objectives, actions, and conservation measures proposed to achieve the goals. The PRMP is primarily a landscape-level, programmatic-level document. The stipulations, conservation measures, and BMPs described below for listed plants, are not comprehensive. New conservation measures may be developed at the project level.

Objectives

Two objectives directly related to listed plant species are included in the PRMP (**Table 2-1**):

- To conserve plants and animals (and their habitats) listed by federal and Colorado governments as threatened, endangered, sensitive or species of concern, and to conserve plants and animals that are candidates for these lists with the overall objective of improving their populations so that they can be removed from these lists.
- Promote maintenance and recovery of federally listed, proposed, and candidate plant species by protecting occupied habitat. Protect occupied habitat for all BLM sensitive plant species and significant plant communities as defined and tracked by CNHP.

Actions and Surface Disturbance Restrictions

Ten actions and surface disturbance restrictions directly related to listed plant species are included in the proposed plan (**Table 2-1**):

- Protect and maintain unique ecological values for the following habitat locations to improve the habitat for unique, sensitive, threatened, and endangered plants and animals:
    - Atwell Gulch ACEC: Colorado hookless cactus, DeBeque milkvetch, and Naturita milkvetch *(Astragalus naturitensis)*;
    - Pyramid Rock ACEC: Colorado hookless cactus, DeBeque phacelia, DeBeque milkvetch, Naturita milkvetch, adobe thistle, and aromatic Indian breadroot;
    - South Shale Ridge ACEC: Colorado hookless cactus, DeBeque phacelia, Naturita milkvetch, and adobe thistle; and
- Identify the following areas as core conservation populations for special status plant species:
    - Atwell Gulch;
    - Logan Wash Mine;
    - Pyramid Rock ACEC;
    - South Shale Ridge;
    - Sunnyside; and
    - Reeder Mesa.
- Manage identified habitat to maintain the population. Management tools include but are not limited to weed treatments, inter-seeding, route closures, fencing, and managing timing and intensity of grazing. Identify additional areas as populations are identified and species of concern are modified. Limit new road construction in Reeder Mesa,

Sunnyside, Logan Wash Mine, and South Shale Ridge, and designate new roads associated with authorized uses as administrative (e.g., oil and gas and ROWs). Rehab and close roads associated with authorized uses when no longer needed.

- Monitor special status plant populations to determine trends, impacts, and guide future management, with an emphasis on areas near surface-disturbing activities. Utilize monitoring data to determine and modify NSO stipulations applicable to current and historically occupied habitat of threatened, endangered, proposed, and candidate plants.
- Reduce redundancies in routes to minimize habitat fragmentation, and minimize direct impacts on listed plant species habitat, and occupied habitat from motorized and mechanized users of roads, routes and trails. Identify mitigation where open routes are negatively effecting designated critical habitat.
- Reduce as much as practicable route density (miles/square mile) within 200 meters of known Threatened and Endangered plant occurrences throughout the field office. If occurrences are identified in the future that conflict with route designations, implement reroutes.
- Prohibit surface occupancy and surface-disturbing activities in the following ACECs to protect threatened, proposed, candidate, and sensitive plants.
    - Atwell Gulch (threatened and sensitive plants);
    - Badger Wash (sensitive plants);
    - Pyramid Rock (threatened and sensitive plants);
    - South Shale Ridge (threatened and sensitive plants); and
    - Unaweep Seep (sensitive plants).
- Prohibit certain surface uses (as specified in Appendix B of the PRMP), to protect threatened, endangered, proposed, and candidate plants and animals from indirect impacts, loss of immediately adjacent suitable habitat, or impacts on primary constituent elements of critical habitat as designated by USFWS. Maintain existing buffer distances where pre-existing disturbance exists, and reduce redundancies in roads to minimize fragmentation, and minimize direct impacts from motorized and mechanized users of roads, routes and trails. In undisturbed environments and ACECs, prohibit new disturbance within 200 meters (656 feet) of current and historically occupied and suitable habitat. This stipulation includes emergency closures of roads where damage to T&E habitat has occurred.

- For those plant communities that meet BLM's criteria for significant plant communities, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. Habitat areas include occupied habitat and habitat necessary for the maintenance or recovery of the species or communities.

Additional management actions indirectly related to the protection of the listed plant species are described in **Table 2-1** and incorporated by reference.

Colorado Standards for Public Land Health

The Colorado Standards for Public Land Health describe conditions needed to sustain public land health. They relate to all uses of the public lands. Standards are applied on a landscape scale and relate to the potential of the landscape (Appendix E of the PRMP). Of the five standards listed, standards 1, 3, and 4 would directly apply to the conservation of listed plant species. Specifically, standard 1 applies to the desire for upland soil moisture conditions to sustain optimal plant growth and vigor. Standard 3 promotes the health of native plants (and animals) at the community and population levels. Standard 4 establishes BLM standards for protecting and enhancing special status, threatened, and endangered federal and state species and other plants and animals.

BMPs for Management Actions

Appendix H of the PRMP includes a number of BMPs and standard operating procedures that would benefit special status plant species by protecting soils, vegetation, and suitable habitat. These BMPs include but are not limited to: closing selected routes to protect special status species and significant plant communities, placing pipelines and other ROWs within road corridors when feasible to minimize disturbance, and minimizing disturbance to soil and native vegetation as much as possible. Additionally, various other practices designed to prevent or limit noxious and invasive weed infestations are also included as BMPs.

Direct and Indirect Effects

There would be no effects on threatened and endangered plant species from air and climate resources; cultural resources; paleontological resources; visual resources; lands with wilderness characteristics; forestry; wild and scenic rivers; National Trails; national, state, and BLM byways; Native American tribal uses; public health and safety; Wilderness Study Areas; socioeconomics; and environmental justice. These resource programs are not discussed further.

Effects from Soils Resource Management

The goal of soil resource management in the GJFO RMP is to ensure upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes. Adequate soil infiltration and permeability allows for optimal plant growth and vigor, and minimizes runoff and erosion. Included within the PRMP are BMPs, stipulations, and other actions

which would protect vulnerable soils (e.g. erosive soils, steep slopes, fragile soils, and biologic soil crusts). Standard operating procedures and BMPs specific to soils include: avoiding vertical cuts, long or steep fill slopes and side cuts across steep slopes. An NSO stipulation which prohibits fluid mineral surface occupancy and use on lands with steep slopes greater than 40 percent would minimize erosion and protect special status plant species found on or bellow steep inclines. The seed bank of the DeBeque phacelia (which is the primary mechanism for which the species survives) is particularly vulnerable to soil disturbing activities, and would therefore benefit from the soil specific stipulations, BMPs, and other actions as described in greater detail in the PRMP.

Effects from Water Resource Management

To protect, preserve, and enhance watershed functions, the PRMP would implement NSO stipulations specific to riparian corridors. NSO-2 (covering streams/springs possessing lotic riparian characteristics) would prohibit surface occupancy and use and surface-disturbing activities within a minimum distance of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage). Where the riparian corridor width is greater than 100 meters (328 feet) from bank-full, surface occupancy and use and surface-disturbing activities would be prohibited within the riparian zone. This measure would protect potential Ute ladies'-tresses habitat in the DeBeque area and near Plateau Creek. The Colorado hookless cactus, DeBeque phacelia, and Parachute penstemon are not known as riparian obligate species; however, this stipulation could provide protection for those species which happen to occur within riparian corridors. This stipulation would provide additional protection to the 200-meter fluid mineral NSO for listed plant species.

Effects from Vegetation Management

In general, vegetation management would emphasize improving and restoring vegetation and special status species habitats. This would be accomplished through actions such as controlling noxious and invasive weeds, implementing woody vegetation treatment projects (e.g. pinyon-juniper and conifer removal), replenished diminished native seed banks, and restrictions on surface-disturbing and disruptive activities in certain locations.

Potential impacts on listed plant species from vegetation treatments include crushing or trampling from heavy equipment, loss of vigor, reduced reproductive output, or mortality from herbicides. Herbicide treatment projects would adhere to the conservation measures and standard operating procedures identified in the Programmatic Integrated Weed Management Plan for the GJFO, which include distance buffer provisions between treatment sites and populations. Weed management impacts on the Colorado hookless cactus, DeBeque phacelia, and Parachute penstemon are analyzed in the BA for Programmatic Integrated Weed Management (BLM 2010b). The BA determined and the USFWS concurred that the Integrated Weed Management Plan may affect, but is not likely to adversely affect these species. This BA tiers to the

2010 Programmatic Integrated Weed Management Plan BO and the analysis therein.

Vegetation treatments would cause short-term disturbance of potential special status plant habitat by removing vegetation and exposing soil. Over the long-term these activities would improve habitats for special status plants by removing competitor species and restoring native species.

Effects from Fish and Wildlife Management
Fish and wildlife management under the PRMP would emphasize providing for aquatic and terrestrial habitats which support an abundance and diversity of fish and wildlife species with self-sustaining populations. In general, fish and wildlife management would improve and maintain habitat throughout the decision area. Applying stipulations to reduce or mitigate surface-disturbing activities within wildlife corridors and wildlife priority habitats would likely provide some additional protection to overlapping habitat for listed plants.

Effects from Special Status Species
The PRMP would work towards managing special status species habitats to provide for their conservation and restoration. Effects to listed plant species would be similar to those described under Fish and Wildlife Management. Core conservation population areas would be identified and managed to maintain the population. Management tools including but not limited to weed treatments, inter-seeding, route closures, fencing, and managing timing and intensity of grazing may be used to meet the goals and objectives for special status plant species.

Effects from Wild Horses
Under the PRMP, the BLM would continue to manage the 35,200-acre Little Book Cliffs Wild Horse Range (LBCWHR) located northwest of Palisade. DeBeque phacelia, Parachute penstemon, and Ute ladies'-tresses are not known to occur within this area; however, Colorado hookless cactus occurrences have been recorded, and effects from trampling and habitat degradation may occur. The LBCWHR would be managed at an appropriate management level, currently identified as 90-150 wild horses, although this number may be adjusted if warranted by range conditions. Additional stipulations and conservation measures specific to the LBCWHR would help protect the Colorado hookless cactus from other resource uses. For example, NSO-36 would prohibit surface occupancy and surface-disturbing activities, thereby protecting hookless cactus populations within the LBCWHR from energy development.

Effects from Wildland Fire Management
Depending on the extent, location, severity, and seral type affected, unplanned ignitions would have adverse impacts on special status species. Unplanned ignitions can remove or degrade habitat for some species and/or reduce population viability. Large or intense wildfires could damage large expanses of

habitat or kill established populations. Indirect effects could result from increased erosion, and increased potential for noxious and invasive weed establishment.

Species such as the Parachute penstemon and DeBeque phacelia are found in barren habitats where fires are uncharacteristic. However, cheatgrass infestations can result in fuel buildup, which could potentially carry fire into these populations. Because these species are not adapted to natural fire regimes, such events would likely result in mortality.

Increased human activity via wildland fire management and prescribed fire could increase the likelihood for injury to or death of special status plant species or changes to survival or reproduction. A large fire that would require extensive suppression, such as large-scale staging areas and fire-line construction, could result in long-term loss of Colorado hookless cactus occurrences and its habitats. However, smaller fires would require less extensive suppression operations and would generally avoid these long-term effects. Extensive staging areas and fire line construction are infrequent in the barren habitat which Parachute penstemon and DeBeque phacelia occupy, but may still occur. Fire and fire suppression activities in these areas could result in impacts to the species including loss of individuals and habitat disturbance.

The PRMP emphasizes a suite of fuels treatments which would provide management flexibility in meeting resource objectives. Fuel treatments would be prioritized to strategically reduce wildfire threat in areas of high risk, rather than areas with a low probability of fire and a longer natural post-fire recovery. All fires would be suppressed in Salt Desert Shrub communities to protect those species not adapted to fire, including the Colorado hookless cactus, and to reduce cheatgrass invasion.

Effects from Livestock Grazing Management

Effects from livestock grazing management tiers to the BA for Effects on Listed Plant Species from the Bureau of Land Management Livestock Grazing Program (BLM 2012a, 2012b). This BA addressed the impacts of the livestock grazing program on ESA-listed plant species, including Colorado hookless cactus.

The primary potential impacts on T&E plants from implementing the livestock grazing program can occur from trampling, alteration of habitat, applying herbicides, and from surface-disturbing actions related to range developments; examples are the construction of fences, water pipelines, cattle guards, and livestock ponds. Potential impacts of livestock grazing vary by plant species and their habitats. Impacts also depend on the class of livestock and the particular grazing system, with some species favored by particular systems and others responding negatively.

Parachute penstemon grows on sparsely vegetated steep talus slopes where livestock grazing use is uncommon. Additionally, most known occurrences

within the planning area occur on private lands where the BLM does not manage livestock grazing. As such, impacts on this species from grazing would be negligible, and the actions and allowable uses as described under the PRMP would have little effect on the species.

Ute ladies'-tresses is found in riparian habitats, such as point bars, sand bars and low lying gravelly, sandy, or cobbly edges. While these are areas which can receive heavy grazing, there are no known occurrences within the planning area, and therefore livestock grazing activities are unlikely to affect the species.

The DeBeque phacelia and Colorado hookless cactus are both susceptible to crushing or trampling, especially in areas of concentrated use such as near salt blocks and livestock ponds. Soils which have high clay content, such as those that support DeBeque phacelia, are especially susceptible to compaction when wet. Late winter and early spring grazing are likely to be most detrimental. Grazing in these habitats could cause injury or direct loss. Additionally, livestock grazing can reduce vegetation cover, affecting species composition, soil compaction, erosion, sedimentation, and increased potential for weed spread and establishment, all of which could reduce the health and vigor of these species communities.

By closing grazing in the entire Pyramid Rock ACEC (1,300 acres), and the majority of the Atwell Gulch ACEC (2,600 acres of 2,900 total acres), populations of listed plants within those designated boundaries would be protected from livestock use. Specifically, those populations of the Colorado hookless cactus found in both ACECs, and populations of the DeBeque phacelia found in the Pyramid Rock ACEC. However, grazing activities would continue to affect those populations found outside the designated ACEC boundaries. Adverse effects to both plant species are anticipated.

Even under proper management, livestock grazing could impact special status species to varying degrees. Impacts from poorly managed livestock grazing would be greater in magnitude and extent than those from properly managed grazing. Under the PRMP, the BLM would periodically evaluate possible livestock grazing closures on allotments or potions of allotments should major impacts on sensitive species occur.

Effects from Recreation and Travel Management

Direct impacts on listed plants from recreation include surface disturbing activities, such as construction of developed recreation facilities, motorized or off-road vehicle (OHV) use, and foot or horse travel. Dispersed recreation off existing roads or trails can result in direct mortality of listed plant species from crushing, trampling, or uprooting. Indirect effects may also occur from recreational use, such as soil compaction, changes in vegetation composition and structure, and loss of vegetative cover; all of which may degrade habitat. Additionally, increased disturbance can result in the spread and establishment of noxious weed populations. The levels of impact are related to the duration,

intensity, and expanse of recreation, and are expected to increase with increased visitation. The risk of impacts is greatest in areas where concentrated human activity, such as Special Recreation Management Areas (SRMAs) and Extensive Recreation Management Areas (ERMAs), overlap with habitat for listed plant species. In general, SRMAs, and ERMAs would avoid much of the currently occupied habitats for special status plant species; however, in some areas the BLM would employ adaptive management to protect special status species if impacts were to occur. Impacts would be more likely to occur in areas that have not been previously inventoried. Travel routes would be planned to avoid known occurrences. However, adverse effects on the Colorado hookless cactus are still anticipated. Under the Proposed RMP, 56.4 miles of routes open to public use (including 11.2 miles of county-maintained roads) would be located within 200 meters of known Colorado hookless cactus occurrences. There would also be 47.9 miles of existing routes within 200 meters of known occurrences proposed for closure and rehabilitation. Within 20 meters of known Colorado hookless cactus occurrences, 4.1 miles of routes would be open to public use (including 0.3 miles of county-maintained roads) and 1.1 miles of routes would be restricted to administrative and permitted use only. There would be 5.8 miles of routes within 20 meters of known occurrences proposed for closure and rehabilitation. Impacts, in the form of trampling, could also occur from cross-country foot and horse travel.

Only 1.4 miles of routes open to public use (including 0.9 miles of county-maintained roads) occur within 200 meters of known DeBeque phacelia populations; no routes occur within 20 meters of known occurrences. Given the limited extent of nearby routes, travel related impacts on DeBeque phacelia would be negligible. No routes open to public use occur within 200 meters of known Parachute penstemon or Ute Ladies'-tresses occurrences. Therefore, no adverse impacts are anticipated for these species.

All Special Recreation Permits (SRPs) would contain standard stipulations appropriate for the type of activity and may include additional stipulations necessary to protect land or resources, including habitat for listed plants.

Effects from Lands and Reality Management

The goal of the GJFO lands and reality management is to meet resource needs while providing public use authorizations such as Rights-of-Way (ROW), renewable energy sources, permits, and leases. New ROWs can result in habitat fragmentation, degradation of habitat, and direct mortality. Land disposal (e.g. though sale or exchange) of listed plant species habitat could result in loss of populations, unless lands leaving public ownership are guaranteed protection though a conservation easement or other agreement. Any acquired lands which contain habitat for listed plants would benefit those species by affording the protection of BLM guidelines and regulations.

ROW exclusion and avoidance areas would minimize impacts on listed plant species and their habitats by prohibiting or limiting development. Under the PRMP, the BLM would manage 221,600 acres as ROW exclusion areas, which would not be available for ROW or other reality authorizations. This includes all occupied Parachute penstemon habitat and ACECs containing listed plant species habitat such as: Pyramid Rock, South Shale Ridge, and a portion of Atwell Gulch (2,600 acres). The BLM would manage 779,800 acres as ROW avoidance areas, which includes special status species occupied and suitable habitat.

Effects from Energy and Mineral Management

Energy development is widespread throughout the GJFO planning area, and oil and natural gas development in particular threaten populations of listed plants in the area. Direct impacts associated with fluid mineral development include habitat disturbance, fragmentation, and destruction; as well as direct mortality from construction equipment, land clearing activities, and vehicle use. The construction of access roads, well pads, pipelines, buildings, holding tanks, and other infrastructure associated with oil and gas development can fragment or degrade habitat, and result in indirect effects such as erosion, sedimentation, and establishment of noxious weeds.

Energy development threatens the Colorado hookless cactus, DeBeque phacelia, and Parachute penstemon, as described in detail within these species recovery plans. Energy development could potentially threaten the Ute ladies'-tresses as well; however, no known populations occur within the action area, and hydrology and riparian stipulations would protect potential habitat. For example, along streams and springs possessing lotic riparian characteristics, surface occupancy and surface disturbing activities would be prohibited with a minimum distance of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage). Therefore no adverse impacts to the Ute ladies'-tresses are anticipated.

The GJFO planning area contains approximately 1,444,000 acres of federal mineral estate, of which 961,600 acres are currently open to leasing. The majority of designated critical habitat within the planning area for DeBeque phacelia (19,400 of 19,600 acres), Parachute penstemon (6,500 of 7,100 acres), and Colorado hookless cactus (2,700 of 3,200 acres) is currently leased for oil and gas development. Because stipulations in the Proposed RMP can only be applied to new leases, Condition of Approvals (COAs) would be more effective at limiting potential impacts associated with fluid mineral developments in these areas. For future leases, implementing stipulation NSO-13 would prohibit surface use within current and historically occupied habitat and critical habitat of threatened and endangered plant species.

Effects from Areas of Critical Environmental Concern Management
The BLM would designate 13 ACECs in the GJFO planning area under the PRMP, encompassing 123,400 acres. Of these, Atwell Gulch, Badger Wash, Dolores River Riparian, Juanita Arch, The Palisade, Pyramid Rock, Roan and Carr Creeks, Rough Canyon, Sinbad Valley, South Shale Ridge, and Unaweep Seep are valued for the rare plants (among other resources) which occur within the proposed designation boundaries. These designated areas would be closed to wood harvest, mineral materials sales, and non-energy leasable mineral exploration and development. Other restrictions include travel route closures or limitations, ROW avoidance or exclusion areas, recreation restrictions, surface disturbance stipulations, and fluid mineral leasing closures. As such, known and undiscovered populations of special status species would be protected from surface disturbance and associated impacts within these areas.

Cumulative Effects
Cumulative effects include those of future state, tribal, local, or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the proposed action are not considered in cumulative analysis because they will be subject to separate consultation, in accordance with Section 7 of the ESA. Cumulative effects address the impact of implementing the RMP in combination with other future non-federal actions outside the scope of this RMP, either in the planning area or next to it.

The cumulative impacts analysis area (CIAA) for Colorado hookless cactus, DeBeque phacelia, Parachute penstemon, and Ute ladies'-tresses extends outside the planning area and follows fourth-order watershed boundaries that completely or partially overlap the planning area. The fourth-order watersheds were used as the basic unit of analysis because the scope of cumulative influence would be at the watershed scale and is not expected to extend beyond this scale. Noxious weeds can also be dispersed into the planning area by upstream waterways and carried downstream from the planning area.

The majority of the planning area occurs within Mesa County, which has experienced significant population growth since 1987, and population forecasts expect the growth trend will continue (Colorado Division of Local Government, State Demography Office 2013). As such, continued use and development within the planning area is expected to continue. Past, present, and reasonably foreseeable future actions and conditions in the CIAA, both on public and private land, that have affected and will likely continue to affect Colorado hookless cactus, DeBeque phacelia, Parachute penstemon, and Ute ladies'-tresses and other vegetation are as follows:

- Mineral exploration and development
- Agricultural development
- ROW and infrastructure development

- Water diversion and withdrawals
- Livestock Grazing
- Recreation
- Road construction
- Weed invasion and spread
- Prescribed and wildland fires
- Land planning
- Vegetation treatments
- Habitat improvement projects
- Insects and disease
- Drought
- Farming

In general, resource use activities have cumulatively caused habitat removal, fragmentation, increased human presence, and weed spread, whereas land planning efforts and vegetation, habitat, and weed treatments have countered these effects by improving habitat connectivity, productivity, diversity, and health. Surface disturbing activities on private lands are likely to have a disproportionate impact on listed plants, as these populations do not receive the same level of protection as federal lands. Conservation easements with private landowners would help protect these populations. For example, 40 percent of Parachute penstemon occupied habitat (and 69 percent of the plants) are located on designated State Natural Areas under a CNAP agreement between the State of Colorado and a private land owner (USFWS 2013b). This CNAP agreement serves as a significant mechanism for the species recovery. A proposal to designate the Logan Wash Mine site as a Natural Area would provide additional protection to the species and its habitat found in this area.

Continued ROW development on all land ownership types likely to impact the DeBeque phacelia and Colorado hookless cactus. A portion of the designated Westwide Energy Corridor crosses DeBeque phacelia habitat, and 13 percent of critical habitat occurs within this corridor (USFWS 2013a). The corridor also covers 70,142 acres of potential habitat for the Colorado hookless cactus (USFWS 2010a).

Many of these activities create conditions that cause vegetation changes. For example, wildland fire removes vegetation, which makes affected areas more susceptible to weed invasion and soil erosion. Droughts reduce vegetation health, leaving it prone to insect infestation or disease. In general, resource use activities have cumulatively caused vegetation removal, fragmentation, weed spread, soil compaction, and erosion; land planning and vegetation and weed treatments have been implemented to counter these effects by improving

vegetation connectivity, productivity, diversity, and health. Climate change in the CIAA could increase or decrease temperatures and precipitation. This would affect soil conditions, vegetation distribution, water flows, water quality, and water temperature (Ficklin et al. 2010; Lenihan et al. 2003; McKenney et al. 2007; Hamann and Wang 2006). Such changes would alter the conditions to which vegetation communities are adapted, potentially creating conditions that favor certain species or communities, weeds, or pests (Hellmann et al. 2007). Recreation has emerged as an ever-increasing pursuit in the planning area and is expected to increase. Popular and common pursuits in the planning area are rafting, boating, hunting, fishing, hiking, camping, skiing, rock climbing, mountain biking, and four-wheeling. Levels of impact are related to the duration, intensity, and expanse of recreation, and are expected to increase with increased visitation.

Under the PRMP impacts on listed plants and their habitat would be minimized to the extent practical and feasible through compliance with the ESA and BLM Manual 6840, restrictions, stipulations, closures to mineral exploration and development, recreation, motorized travel, designation of ACECs to protect certain special status species, COAs, and by concentrating development in previously disturbed areas. Habitat conditions would be improved through treatments, weed prevention and control, acquisition of water rights, use of prescribed and wildland fire, forestry management, and grazing management.

4.2.2 Fishes

The following analysis was combined to include all five listed fish species: Colorado pikeminnow, bonytail, humpback chub, razorback sucker, and green lineage cutthroat trout. Effects which may differ for individual species are clarified in the text.

Assumptions and Methods of Analysis

The following assumptions apply throughout the assessment of effects of the proposed action on the five listed fishes (Colorado pikeminnow, bonytail, humpback chub, razorback sucker, and green lineage cutthroat trout):

- Some actions may benefit one species while having a negative or beneficial impact on another.
- Maintaining high quality habitat conditions would have some influence on reducing the severity of outbreaks and subsequent losses from diseases. But the prevalence in the environment of various diseases could not be fully controlled, particularly at chronic levels of occurrence.
- Impacts on fish are based on the following cause and effect premise:
    - Exposure—The likelihood that a given stressor will affect a given species

  - Stressor—The portions of an action that may cause some sort of a reaction by the species
  - Response—The negative, positive, or neutral response of the species to the stressor
- Unless otherwise noted, short-term impacts are defined as impacts expected to last two years or less; long-term impacts are defined as impacts expected to last longer than 2 years.
- Although recent studies distinguish true greenback cutthroat trout populations from green lineage cutthroat trout populations, both are treated the same in terms of management and protection. As such, if an action may affect a green lineage cutthroat trout population, then initiation of Section 7 consultation is appropriate.

The following primary impacts for the listed fish species and their habitats are the focus of the effects analysis:

- Water quality alteration—Actions, activities, or accidents (spills and leaks) that could alter important water quality parameters, such as pH, dissolved oxygen, temperature, alkalinity, and turbidity
- Direct mortality—Sublethal effects of stress, reduced recruitment, and reduced quality and quantity of food
- Water depletions—Loss of physical habitat, reduced water quality, increased sedimentation, loss of habitat structure and complexity, reduced recruitment, reduced food quality and quantity, disease, and stress
- Introduction and spread of aquatic nuisance species or disease vectors—Competition for resources, displacement, predation, reduced recruitment
- Direct mortality—Potential direct mortality of eggs, larvae, and adults of fish in low-water crossing areas

Conservation Planning (as Relates to Section 7[a][1] of the ESA

The goals for biological resources management, including ESA-listed species, in the PRMP are summarized in **Table 2-1** of this BA. Additionally, **Table 2-1** includes the objectives, actions, and conservation measures proposed to achieve the goals. The PRMP is primarily a landscape-level, programmatic-level document. The stipulations, conservation measures, and BMPs described below for listed fishes are not comprehensive. New conservation measures may be developed at the project level.

Objectives

The following objective from the PRMP is directly related to listed fish species (see **Table 2-1**):

- Maintain or improve the quality of listed (threatened or endangered) fish and sensitive fish habitat by managing public land activities to support species recovery and the benefit of those species.

Actions and Surface Disturbance Restrictions

Seven actions and surface disturbance restrictions directly related to listed plant species are included in the proposed plan (**Table 2-1**):

- Identify limiting habitat factors based on site characteristics and habitat capabilities using channel type and geology classifications (e.g., Rosgen). Upon identification of limiting factors, prioritize and implement proven river, stream, lake, and riparian practices (e.g., in-channel habitat structures to create pools, riparian plantings) or by changing management of other program activities (e.g., changing livestock grazing season use) to achieve desired future condition.
- Designate the following ACECs to protect habitat for unique, sensitive, and listed fish (see ACECs section for management prescriptions):
    - Roan and Carr Creeks: green lineage cutthroat trout *(Oncorhynchus clarkii)*.
- While maintaining desired levels of access, identify and reroute or close and rehabilitate redundant, duplicative, or poorly constructed routes to reduce point sources of erosion and resulting sedimentation and turbidity impacts within watersheds containing known Colorado River and Greenback cutthroat trout populations. Focus on routes within closest proximity to occupied streams.
- Prohibit in-channel stream work in all occupied streams during fish spawning, egg incubation, and fry emerging seasons. Fish spawning, egg incubation, and fry emerging seasons vary by elevation and temperatures. Refer to **Table 2-1** for details.
- No surface occupancy or use is allowed within 400 meters (1312 feet) of the ordinary high-water mark (bank-full stage) or within 100 meters (328 feet) of the 100-year floodplain (whichever area is greatest) on the following major rivers: Colorado, Dolores, and Gunnison.
- Prohibit surface occupancy and surface disturbing activities with a minimum distance of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage). Where the riparian corridor width is greater than 100 meters (328 feet) from bank-full, prohibit surface occupancy and surface disturbing activities within the riparian zone. (Refer to Appendix B of the PRMP.)

- Manage the Roan and Carr Creeks ACEC as a ROW avoidance area to protect special status fish species' habitat.

Colorado Standards for Public Land Health
Colorado Public Land Health Standards are applied on a landscape scale (Appendix E of the PRMP). Of the five listed standards, Standards 2, 4, and 5 would directly apply to conservation of listed fish species within the GJFO planning area. Standard 2 applies to recovery of properly functioning lentic and lotic waters from disturbances such as fire, overgrazing, and floods. Standard 4 establishes standards for protecting and enhancing special status, threatened, and endangered species (federal and state), including big river fish. Standard 5 applies to all water bodies, including groundwater on or influenced by BLM lands, to achieve or exceed the water quality standards established by the State of Colorado. Water quality standards for surface water and groundwater include the designated beneficial uses, numeric and narrative criteria, and antidegradation requirements set forth under 5 Colorado Code of Regulations 1002-8, as required by Section 303(c) of the Clean Water Act.

BMPs for Management Actions
Appendix H of the PRMP includes a number of standard operating procedures and BMPs that would directly or indirectly benefit listed fish species by protecting soils, water resources, riparian habitat and wetlands, fish and wildlife management, and special status species.

Direct and Indirect Effects
There would be no effects on threatened and endangered fish species from air and climate resources; wild horse management; cultural resources, paleontological resources, visual resources, lands with wilderness characteristics, wild and scenic rivers, National Trails, national, state, and BLM byways; Native American tribal uses; public health and safety; socioeconomics; and environmental justice. These resource programs are not discussed further.

Water Depletion Programmatic BAs
The BLM has determined, and the USFWS has concurred, that any water depletions in the Colorado River Basin are likely to adversely affect the four endangered Colorado River fishes and their critical habitats (BLM 2008a, 2008b; USFWS 2008, 2009a). Two programmatic BAs assessed the effects of activities administered by the BLM across eight administrative units and field offices in western Colorado that could deplete water from the upper Colorado River Basin. One BA assessed the BLM's fluid mineral program and consists of ongoing and projected fluid mineral development administered by the BLM in western Colorado including all federal natural gas wells, oil wells, and coalbed methane natural gas wells including split estate (BLM 2008b). This BA addressed water depletion activities such as: water used for access road dust abatement, water used for hydrostatic testing of new pipelines, water used to drill and complete wells, water associated with connected federal actions, and water use associated

with seismic activity. The second BA (BLM 2008a) addressed all other water depleting projects including impoundments, diversions, water wells, pipelines, and spring developments.

These programmatic BAs cover most BLM activities in the action area. Therefore, the impact analysis contained in them is incorporated here by reference. The following impact analysis addresses only impacts not included in the two programmatic BAs. These BAs did not assess the effects of water depletions on the green lineage cutthroat trout; those effects are discussed below.

Effects from Soil Management

Stipulations, BMPs, and other conservation actions related to soils management would benefit the five listed fish species by reducing erosion and sedimentation potential. These measures would be particularly beneficial to populations of green lineage cutthroat trout which are more susceptible to increased sediment and turbidity. Increased sediments in the cutthroat trout streams can reduce dissolved oxygen, raise stream temperature, and can cover spawning and rearing areas, thereby reducing the survival of fish embryos and juveniles (US Forest Service 2009). Excessive sedimentation can also fill in important pool habitats, reducing their depth and making them less usable. Pool habitats are important as over-summer and over-winter thermal refuge areas and, when coupled with stream-flows, are often a limiting factor in many cutthroat trout streams. While impacts on the sediment-tolerant big river fish species would not be as pronounced as those on the green lineage cutthroat trout, increased turbidity and altered flow regimes can still result in impacts. Sediment loads beyond what water volumes can effectively and efficiently move can restrict channel width, reduce side-channel formation and maintenance, and result in reduced numbers and depth of important microhabitats such as backwaters. In general, sediment loads out of balance with flow regimes can result in reduced habitat complexity and diversity and reduce habitat quality for these species.

High concentrations of selenium may adversely affect listed fish species. Selenium is a natural trace element that is a component of certain sedimentary deposited soils, primarily Mancos shale, a common formation in parts of western Colorado, and is a known water quality problem for the Colorado pikeminnow, bonytail, humpback chub, and razorback sucker. The Mancos shale formation occurs within the planning area, and experiences substantial instability. Selenium becomes an issue when upon saturation, it leaches into water. In larger rivers, it becomes concentrated and accumulates in low to zero velocity habitats and enters the food chain. Historic agricultural practices in particular have resulted in the Colorado River having higher than desired levels of selenium. Selenium concentrations of 4.9-7.0 µg/g dry weight in whole body fish from the Colorado River basin have been among the highest in the nation (Hamilton et al. 2002). Selenium bioaccumulates in fish tissue primarily via the consumption of food resources that contain elevated levels of the compound.

All of the endangered big river fish species are at increased risk because they are all long lived species which increases bioaccumulation potential. Colorado pikeminnow are especially at risk given their piscivorous (fish eating) nature and status as the top predator. High selenium levels can affect reproduction and recruitment (Lemly 2002; Sorensen 1991). Tissue samples taken from Colorado pikeminnow in the Colorado River near Grand Junction, CO showed selenium levels to be above the recommended toxicity threshold of 4 parts per million in the majority of fish (Osmundson et al. 2000).

Approximately 171,900 acres of potentially unstable Mancos shale areas were mapped throughout the planning area, the majority of which occurs north of Interstate 70. One of the objectives for soil management included within the PRMP is to "minimize or control elevated levels of salt sediment, and selenium contribution from federal lands to river systems in the planning area." Protective soil program stipulations would help to eliminate and reduce potential impacts. For example, CO-CSU-Geology Soil would restrict all surface disturbing activities on fragile soils and mapped Mancos shale and saline soils. This could include special design, construction, and implementation measures, including relocation of operations by more than 200 meters (625 feet). This stipulation would apply to 481,600 acres, and would reduce the potential for selenium and salt contributions into the major waterways due to anthropogenic activity. CO-NSO-Geology Slope would prohibit surface occupancy and use on lands with steep slopes greater than or equal to 40 percent. This stipulation would encompass 347,700 acres, and protect inclined slopes which are particularly vulnerable to accelerated erosion. These measures, in combination with BMPs and other soil and geology stipulations, would help minimize or control elevated selenium levels. Selenium leaching is a naturally occurring process within the planning area, and is expected to continue. However, implementation of the RMP is not expected to increase selenium contributions beyond current conditions. Soil management is not anticipated to adversely affect the five listed fish species.

Effects from Water Resource Management

To protect, preserve, and enhance watershed functions, the PRMP would implement BMPs, NSO stipulations, and other conservation measures within or near streams and rivers. Activities such as energy development, road use, active pipeline rights-of-ways, and other construction activities can alter water quality by way of spills, leaks, or vehicular accidents. Impacts on fish species can range from sub-lethal (stress, reduced feeding behavior, reduced breeding success and recruitment), to direct mortality of individuals or populations. To protect water quality, operators would utilize standard operating procedures and BMPs as described in Appendix H of the RMP. These include but are not limited to: using closed loop drilling systems, containing flowback and stimulation fluids in tanks on well pads with secondary containment mats/blankets, and collecting baseline water quality data from downstream fresh water sources prior to drilling, mining, or storage of potentially harmful substances. Specific stipulations which

limit or restrict surface disturbing actions within stream corridors would also reduce the risk of water quality impairments (e.g. spills, leaks, fine sediments, and other contaminants).

Water depletion activities would result in adverse effects to the four big river listed fish species. The primary actions and activities that result in water depletions include construction of water impoundments (stock ponds, reservoirs), water diversions for agricultural and domestic uses, water use associated with natural gas development, and fire suppression. Effects to the four big river endangered species were analyzed in the two BAs for water depletion activities in western Colorado (BLM 2008a; BLM 2008b). The BAs concluded and the USFWS concurred that any water depletion activities would have an adverse effect of these four fish species.

Water depletions would also affect green lineage cutthroat trout populations. Reduced flow can result in increased water temperatures, reduced food supplies, reduced habitat complexity and diversity, and a loss of carrying capacity. Important microhabitats such as spawning bars and pools can be lost or altered. Reduced flows can result in habitat fragmentation and limit movement of cutthroat between preferred habitats. Holding habitats (pools) can be reduced in size and become less useable by fish or amphibians. Fish that congregate in limited pool habitats for long periods can incur increased stress and susceptibility to disease. However, the green lineage cutthroat trout is a headwater species; therefore, water depletions along the Colorado, Gunnison, and Dolores Rivers would have no effect. Activities resulting in water depletions from headwater streams where green lineage cutthroat trout are known or believed to occur would require separate consultation with the USFWS.

Effects from Vegetation Management

Vegetation management under the PRMP includes mechanical treatments, hand thinning, prescribed fire, and herbicide use. The types of effects on listed fish species from vegetation management include loss or reduced streamside vegetation cover, sediment transport, increased turbidity, and incidental exposure to herbicides.

Impacts on listed fish species associated with weed management were analyzed in the BA for Programmatic Integrated Weed Management (BLM 2010b). The standard operating procedures and conservation measures identified in this document would help to protect the listed fish species from incidental herbicide exposure. The BA determined and the USFWS concurred that the Integrated Weed Management Plan may affect, but is not likely to adversely affect the green lineage cutthroat trout, Colorado pikeminnow, razorback sucker, bonytail, and humpback chub. This BA tiers to the 2010 Programmatic Integrated Weed Management Plan BO.

Loss of streamside vegetation cover and increased sedimentation and turbidity may occur as a result of vegetation treatments. However, these impacts would

generally be short term and minor. The minimal amount of sediment transport that could result from vegetation management would be undetectable and well within the background levels carried by the Colorado or Gunnison Rivers, and would therefore have no adverse effect on the four listed fish species within these water bodies. Short-term impacts associated with streamside vegetation treatments would have a greater effect on green lineage cutthroat trout. However, vegetation management actions would emphasize healthy riparian vegetation systems capable of capturing sediment and providing forage habitat. As such, vegetation management would have long-term benefits to green lineage cutthroat trout.

Effects from Fish and Wildlife Management

Fish and wildlife management would benefit the five listed fish species which occur within the planning area by applying stipulations and other actions which protect steam channels and river corridors. In-channel stream work TLs would help protect fish species during spawning, egg incubation, and fry emerging seasons. Additionally, NSO stipulations within 400 feet (for fluid mineral activities) or 0.25-mile (all other programs except fluid minerals) of the ordinary high-water mark (bank-full stage) of the major river corridors, would reduce sedimentation potential.

Effects from Special Status Species Management

Special status species management would benefit the listed fish species. Conservation actions and stipulations as described throughout this analysis (e.g., NSO stipulations, ACEC management, route closures) would work towards maintaining or improving the quality of listed fish and sensitive fish habitat by managing public land activities to support species recovery and the benefit of those species.

Effects from Wildland Fire Management

Fire management in the GJFO is guided by the Fire Management Plan for the Colorado National Monument and BLM Grand Junction Field Office (BLM 2008c). Effects to special status species (including listed fish) were analyzed in the Environmental Assessment prepared by the BLM, and are incorporated by reference. In summary, mitigation will provide for the protection of ponds, live streams and their attendant riparian areas by precluding all equipment, fire lines and all other unnecessary disturbance from the area including a buffer area (determined on a case-by-case basis) during firefighting activities (subject to exceptions). Short-term effects from ash runoff and sedimentation can occur; however, long-term adverse effects on listed fish species are not anticipated.

Water withdrawals used in combating fire could alter the hydrologic regime of aquatic systems, affecting special status fish species in the GJFO and downstream.

Effects from Forestry Management

Effects from forestry management are similar to those discussed under vegetation management. Closing wood harvesting in ACECs, the Palisade watershed, municipal watershed, and other areas identified in the PRMP would limit sediment transport to nearby stream systems. Impacts on listed fish species would be short-term and minor.

Effects from Livestock Grazing Management

Under the PRMP, 960,500 acres of land would be open to livestock grazing, which includes lands adjacent to streams and rivers utilized by listed fish species. Livestock often use riparian areas for water and shade, which may cause greater impacts in these areas. Concentrating livestock in these areas could alter stream functionality and vegetation structural diversity. The loss or reduction of streamside vegetation can decrease available aquatic cover, increase water temperatures, and reduce the availability of insects to feed fish and other aquatic wildlife. Additionally, livestock use near riparian areas can contribute to the spread of invasive weed species downstream, thus increasing the fuel load.

Livestock grazing could change aquatic habitat connectivity by altering bank stabilization and water quality in certain areas. Water developments near tributary creeks could affect the hydrologic regime of these systems by withdrawing water. Range improvements, including the construction of stock ponds, could promote vegetation loss, soil compaction, and erosion in the areas around the ponds. However, depending on the placement of stock ponds, new livestock water sources may draw livestock away from existing natural water features and sensitive riparian habitat that have vulnerable soils.

Under the PRMP, the BLM would periodically evaluate possible livestock grazing closures on allotments or potions of allotments should major impacts on sensitive species (including fish) occur. Specific allotments identified as closed to grazing would benefit green lineage cutthroat trout in areas such as Brush Creek.

Effects from Recreation and Travel Management

Recreation in riparian areas and waterways could alter aquatic wildlife movement patterns. Use of trails to access fishing along streams or lakes could compact soil, exacerbate erosion and sedimentation into waterways, and reduce vegetation cover. The spread of aquatic disease vectors is also of concern: fishing equipment and boats can provide a means for transporting parasites to previously unaffected habitats.

Green lineage cutthroat trout are susceptible to whirling disease: a parasite-caused condition which can limit recruitment and long-term population persistence, and can result in mortality. The parasite is difficult to eradicate once established in a previously unexposed aquatic ecosystem (Nehring et al. 2005). The PRMP would implement measures to reduce the chance of spreading whirling disease. Specifically, all equipment associated with actions permitted by

the BLM (including but not limited to Special Recreation Permits) conducted within or near perennial water source previously used in water bodies with known invasive species would be treated with accepted disinfection practices prior to launch.

Travel on routes can present a high risk of sediment impacts on aquatic fish species, including green lineage cutthroat trout. Sediments of less than 1 millimeter can impact spawning habitat and reproductive success for fish species that spawn in gravel substrates. Tiny sediments can fill the interstitial spaces in spawning gravels and reduce the flow of oxygenated water to developing embryos, which decreases survival (Quinn 2005). Although sediments and turbid waters may provide cover from predators for sediment-tolerant species, including razorback sucker (Johnson and Hines 1999), too much sediment could negatively impact spawning success of other fish species.

Travel routes may cross water bodies; these routes often require in-channel structures such as culverts and bridges, which remove aquatic habitat and may be barriers to fish passage (Bryant 1981; Barrett et al. 1992). By designating zero acres as open to cross-country motorized travel within 100 feet of perennial streams, and by closing an additional 260 acres of land within 100 feet of perennial streams to motorized travel, the Proposed RMP would decrease impacts on green lineage cutthroat and big river fish and their habitat over the long term.

Riparian areas and waterways are popular recreation spots, and demand for access (e.g., more roads) to these areas is expected to increase over the long term. This would cause greater impacts on aquatic species. Some species may adapt to disturbances over time and could recolonize disturbed habitats. Impacts are more likely to occur in easily accessible areas, where visitation would be high and concentrated.

Effects from Lands and Reality Management

Impacts on listed fish species from lands and reality management would depend on the location and extent of the activity. ROW authorizations in proximity to or upstream of waterways with occupied listed fish species could result in increased sedimentation and turbidity; however, these impacts would typically be site specific and small in scale. ROW exclusion areas would be designated on 221,600 acres, including the majority of the Dolores River Canyon. ROW avoidance areas would be designated on 779,800 acres, including the Roan and Carr Creeks ACEC (which contain green lineage cutthroat trout populations), and floodplains. These measures would reduce lands and reality impacts on listed fish species and their habitats.

Effects from Energy and Mineral Management

Impacts on the four big river endangered fish species resulting from increased sediment and turbidity associated with energy development projects would be minor. Any fluid mineral or other energy activity which results in water

depletions would have adverse effects on these species; these activities and effects are addressed in the Programmatic BA and BO for Water Depletions Associated with Bureau of Land Management's Fluid Mineral Program within the Upper Colorado River Basin in Colorado (BLM 2008b).

The effects of sedimentation and increased turbidity would be more likely to affect populations of green lineage cutthroat trout. Actions that result in ground disturbance including the construction of well pads, pipelines, compressor stations, settling ponds, and access roads, can increase soils available for offsite transport and increased sedimentation and turbidity in streams. NSO-2 would prohibit surface occupancy and surface disturbing activities with a minimum distance of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage). This measure would limit impacts associated with unleased fluid mineral development on green lineage cutthroat trout populations and habitats.

Effects from Wilderness Study Area Management
Designating additional WSAs is not being considered under the PRMP. Four existing WSAs occur within the planning area: Demaree Canyon (22,700 acres); Little Book Cliffs (29,300 acres); The Palisade (26,700 acres); and Sewemup Mesa (17,800 acres). Continued management of the four WSAs within the planning area would benefit green lineage cutthroat trout in nearby aquatic systems by implementing more restrictive use stipulations and actions (such as closing these areas to motorized and mechanized travel).

Effects from Areas of Critical Environmental Concern Management
The BLM would designate 13 ACECs in the GJFO planning area under the PRMP, encompassing 123,400 acres. Of these, Dolores River Riparian, Roan and Carr Creeks, and Rough Canyon are valued for the rare fish species (among other resources) which occur within the proposed designated boundaries. These designated areas would be closed to wood harvest, mineral materials sales, and non-energy leasable mineral exploration and development. Other restrictions include travel route closures or limitations, ROW avoidance or exclusion areas, recreation restrictions, surface disturbance stipulations, and fluid mineral leasing closures. As such, listed fish species (primarily green lineage cutthroat trout in the Roan and Carr Creeks ACEC) which occur in these waterways would benefit from ACEC management.

Cumulative Effects
Cumulative effects under the ESA are the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the proposed action are not considered in the cumulative analysis because they will be subject to separate consultation, in accordance with Section 7 of the ESA. Cumulative effects address the impact of implementing the RMP in combination with other future non-federal actions outside the scope of this RMP, either in the planning area or next to it.

The CIAA for the five listed fish species extends outside the planning area and follows fourth-order watershed boundaries that completely or partially overlap the planning area. This includes private and state lands and accounts for cumulative effects associated with water depletions outside the planning area.

Declines in the abundance or range of these fish species have been attributed to various human activities on federal, state, and private lands. These activities are expanding human population and associated infrastructure development; constructing and operating dams along major waterways; water retention, diversion, or dewatering of springs, wetlands, or streams; recreation, including off-road vehicle activity; expanding agricultural and grazing activities, including altering or clearing native habitats for domestic animals or crops; and introducing nonnative plant, wildlife, or aquatic species.

These types of activities can alter native habitats. When nonnative fish are introduced, they can prey on young listed species or outcompete them for space, optimal habitats, and food. Many of these activities are expected to continue on lands in the range of these fish species and could contribute to cumulative effects on these species in the analysis area.

Water diversions began when the first white settlers to the region began to manage water for human uses, including irrigation for crops, livestock, and domestic uses. As population centers in the planning area and beyond continued to grow and expand, water demand increased. Western Colorado is considered water rich, compared to the Front Range population center of Colorado, where water is more limited. Several dams and reservoirs and large trans-mountain/basin water diversions were constructed to take water from headwater streams in the Colorado River Basin and move it through the Continental Divide to Front Range municipalities. The GJFO has been and will continue to be affected by irrigation and drinking water diversions. Reservoir operations have affected water supply, aquatic conditions, and timing. Irrigation rights are expected to continue being bought and sold in the future, with some new property owners informally changing how the right was historically used. Due to population growth and land sales, more agricultural water rights may be converted to municipal and industrial uses. Future oil shale development could also result in water diversions. Impacts associated with water depletions include habitat alteration, sediment aggradation, reduced spawning habitat and habitat complexity and diversity, and loss of important microhabitats, including backwaters, flooded bottomlands, and side channels.

Introductions of nonnative fishes were common in the late 1800s and throughout the 1900s. Several species were stocked as sport fish and for food production, including rainbow trout, brown trout, brook trout, and Snake River and Yellowstone cutthroat trout. In addition, purposely or accidentally, other species have made their way to the west slope of Colorado. Examples are fathead minnows, white suckers, longnose suckers, channel catfish, and

smallmouth bass. Nonnative species often outcompete native species where they commingle. These species can also prey on native fishes, and in other cases, nonnative fishes of the same genus or subspecies can hybridize with native species, reducing their genetic integrity and fitness. This is particularly common in the sucker species. Nonnative fish stocking is much more limited today, as emphasis has shifted to native species management. However, this impact that started a hundred years ago will continue to be a problem throughout the life of the RMP.

Land management actions and activities have been ongoing since the settling of the West. Fire suppression, logging, recreation use, livestock grazing, mining, natural gas development, native rangeland conversion to agriculture, road construction, pipelines, power lines, railroads, and ever-increasing urban sprawl have all resulted in cumulative impacts on watersheds that contain aquatic species. Impacts are habitat alteration, streamside vegetation cover reduction, water quantity and quality impacts, and site-specific increases in sediment and turbidity. It is many of these actions that resulted in select species having been designated as special status, as populations have declined and habitats for these species have been altered.

Elevated selenium concentrations also present a risk to the listed fish species by affecting reproduction and recruitment. While selenium leaching is common within the planning area due to the naturally occurring Mancos shale formations, historic agricultural practices have resulted in both the Gunnison and Colorado rivers having higher than desired level of selenium. Extensive irrigation activities which occur on Mancos shale formations (particularly east of the Uncompahgre Valley and on the western half of the Grand Valley) are likely to continue contributing to selenium leaching, along with non-anthropogenic soil erosion.

Another emerging issue is the effect of a changing climate. This could impact special status aquatic species and their habitats by reducing suitable habitat, changing distributions, and altering food webs and water quality (temperatures). These fish are cool-water/warm-water species, and while there certainly can be effects, most research has focused on potential effects on cold-water species, such as cutthroat trout. Scientists predict that there will be an increase in the severity and frequency of droughts, floods, and wildfires, as well as changes in the timing of snowmelt and peak flows (Isaak et al. 2010; Haak et al. 2010; Rieman and Isaak 2010; Wenger et al. 2011).

Changes in timing of snowmelt and peak flows could also affect spawning times and breeding and recruitment success for these fish. Wildfire frequency and intensity could result in select debris and ash flows; these have been shown to impact these fish in select locations. Drought frequency and severity could further reduce flows, which, when coupled with other water depleting activities, could result in cumulative effects on these species. There are many unknowns about potential impacts and their likelihood. Managing habitats to their full

potential will help to reduce the potential effects of climate change on these species.

4.2.3 Terrestrial Wildlife—General

Assumptions and Methods of Analysis

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources and relevant data and on the professional judgment of experts in and outside the BLM. Impacts were quantified where possible, and in the absence of quantitative data, best professional judgment was used. Impacts are sometimes described using ranges of potential impacts or in qualitative terms, if quantitative data were not necessary or available.

The following assumptions were used in the analysis of impacts on all special status terrestrial wildlife species.

- Maintaining high quality habitat conditions would have some influence on reducing the severity of outbreaks and subsequent losses from diseases, but the prevalence in the environment of various diseases cannot be fully controlled, particularly at chronic levels of occurrence.
- Significant modifications to habitat suitability can affect the survivability and viability of populations (e.g., higher winter mortality and reduced reproductive success).
- Impacts on special status terrestrial wildlife populations and habitat are not discrete since actions may benefit one species while having an adverse impact on another.
- Impacts from displacing wildlife would be greater for special status species that have limited habitat or a low tolerance for disturbance.
- In the context of this analysis, "avoidance by wildlife" means reduced use, not absence of use by wildlife.
- The CPW would continue to manage wildlife populations.
- The BLM would continue to manage wildlife habitat, in coordination with the CPW. The BLM is not restricted from making reasonable land management decisions within the framework of multiple use management, applicable laws, policy, and supplemental guidance.

Impacts on special status wildlife species and their habitat would be considered significant if the following were to occur:

- Disturbance or loss of terrestrial habitat, food supplies, cover, breeding areas, and other habitat components to a degree considered essential to the local populations for population maintenance.

- Disturbance or loss of seasonally important habitat, such as critical for overwintering or successful breeding, to the degree considered essential for maintenance of the local population.
- Interference with the movement patterns of a species to the extent that it decreases the ability of the species to breed or overwinter successfully to a degree considered essential for maintenance of the local population.
- Special status species objectives are not achieved.

4.2.4 Mexican Spotted Owl

Assumptions and Methods of Analysis

Suitable habitat exists for Mexican spotted owl in the GJFO, but the species has not been observed there. The closest designated critical habitat for the species is approximately 30 miles southwest of the GJFO boundary, in the San Juan Mountains of Utah. Therefore, impact analysis is based on how the PRMP would directly or indirectly maintain the condition of habitat that is potentially suitable mixed-conifer forest habitat and offer protections for the species should it occur in the GJFO.

Conservation Planning (Section 7 [a][1] of the ESA)

The goal of biological resources management (including for ESA-listed species) in the PRMP is summarized in **Table 2-1**. The goals for protecting special status wildlife species, including Mexican spotted owl, are also presented in **Table 2-1**. The goals presented there are the same for all ESA-listed species considered in the PRMP and this BA. Additionally, **Table 2-1** includes the objectives, management actions, and conservation measures of the BLM proposed plan to achieve the goal.

The PRMP is primarily a landscape-level, programmatic-level document. The stipulations and conservation measures for the Mexican spotted owl and the BMPs described in Appendix H are not comprehensive. New conservation measures may be developed at the project level. Surveys not associated with specific projects would be conducted in suitable habitat as funding and time allows.

Objectives

There are no objectives specific to Mexican spotted owl in the proposed plan; however, the species habitat would benefit from objectives directed towards the protection of all special status species and their habitat as detailed in Chapter 2 of the EIS as well as management actions for ponderosa pine and spruce/fir habitats.

Actions and Surface Disturbance Restrictions

There are no actions specific to Mexican spotted owl in the proposed plan; however, the species habitat would benefit from actions and stipulations

directed towards the protection of all special status species and their habitat as detailed in Chapter **Table 2-1**.

Colorado Standards for Public Land Health
The Colorado Public Land Health Standards are applied on a landscape scale and relate to the potential of the landscape (Appendix E of the PRMP). Of the five standards listed, Standards 1, 3, and 4 would directly apply for promoting the conservation of Mexican spotted owl habitat. Specifically, Standard 1 applies to the desire for upland soil moisture conditions to sustain optimal plant growth and vigor for vegetation. This would then support healthy habitats. Standard 3 promotes the health of native plant and animal communities at the community and population levels. Standard 4 establishes BLM standards for protecting and enhancing special status, threatened and endangered species (federal and state), and other species.

BMPs for Management Actions
Appendix H of the PRMP includes a number of standard operating procedures and BMPs applicable to the management actions proposed under the PRMP. The BMPs and conditions of approval described in Appendix H that would benefit Mexican spotted owl habitat are those aimed at protecting soils, vegetation, and special status species. No BMPs specifically address Mexican spotted owl.

Direct and Indirect Effects
There would be no impacts on Mexican spotted owl from air and climate resources; wild horse management; cultural resources; paleontological resources; visual resources; lands with wilderness characteristics; land tenure and land use; wild and scenic rivers; wilderness study areas; National Trails; national, state, and BLM byways; Native American tribal uses; public health and safety; socioeconomics; and environmental justice. These resource programs are not discussed further.

Effects from Soils Management
In general, actions related to soils management would strive to maintain or improve soil productivity, including retention of topsoil quality and reestablish soil capability, potential, and functionality when disturbed. As a result, Mexican spotted owl habitat would benefit from reduced erosion and sedimentation and increased water infiltration, which would generally maintain or improve habitat.

Effects from Water Resource Management
Decisions related to water resource management would work towards protecting, preserving, and enhancing the watershed function. Stipulations which restrict or prohibit surface disturbing activities within stream corridors would help to maintain potential habitat for the Mexican spotted owl and its prey.

Effects from Vegetation Management
Desired vegetation management objectives emphasize perpetuating late- to mid seral plant communities that provide suitable habitat for wildlife. Ponderosa

pine, Douglas-fir, and spruce/fir communities would be managed to mimic natural stand conditions and natural regeneration. Vegetation treatments may occur within suitable habitat for the Mexican spotted owl. However, because no individuals are known to occur within the planning area, no impacts are anticipated. Vegetation management would increase stand resilience to beetles and disease, which would promote long-term forest health. Current acreage of old growth pinyon juniper would be maintained and old growth woodlands would be managed as ROW avoidance areas. Maintaining plant communities (particularly those with late-seral characteristics) would benefit Mexican spotted owl habitat.

Effects from Fish and Wildlife Management
In general, fish and wildlife management would improve and maintain habitat throughout the decision area. Applying stipulations to reduce or mitigate surface-disturbing activities within wildlife corridors and wildlife priority habitats would likely benefit Mexican spotted owl habitat and habitat for prey species.

Effects from Special Status Species Management
Actions and stipulations proposed for the benefit of special status species would provide short and long-term benefits to Mexican spotted owl. Effects from special status species management are similar to those described under Effects from Fish and Wildlife Management.

Effects from Wildland Fire Management
Direct effects to Mexican spotted owl habitat as a result of prescribed or wildland fire would include degradation or loss. The effects of wildfire would depend on the severity and extent of the fire. A large fire that would require extensive suppression operations, such as large-scale staging areas and fire-line construction, could result in long-term effects to Mexican spotted owl habitat within the planning area. Fire or fire suppression activities which result in the loss of mature trees, snags, or canopy cover would have the greatest impact on suitable habitat.

Prescribed burning could also affect habitat by changing the vegetation structure. Common features associated with roosting and nesting habitat include large trees, multistory canopies, standing dead trees, uneven-tree stands, and tree canopy creating shade over 40 percent or more of the ground cover. Prescribed burning could have short term impacts on Mexican spotted owl habitat by removing these roosting and nesting components; however, long-term benefits would include increased vegetation diversity with more productive prey base over time.

Effects from Forestry Management
Effects from forestry are similar to those described under Vegetation Management. Forestry practices would utilize a variety of silvicultural techniques and harvest systems to manage for healthy forests and woodlands while offering

a variety of forest products and meeting other resource objectives. No long-term adverse effects from forestry management are anticipated.

Effects from Livestock Grazing Management

Livestock grazing and wild ungulate management which results in heavy to severe utilization levels can reduce stubble height which serves as a food source and protective cover for Mexican spotted owl prey species such as voles (Birney et al. 1976; Getz 1985; Peles and Barrett 1996). The PRMP includes measures which allow for changes in livestock use through allotment management plans, grazing use agreements, and terms and conditions on grazing permits for priority allotments based on the current prioritization process and/or land health issues. As such, no long-term adverse effects to Mexican spotted owl habitat from livestock grazing management are anticipated.

Effects from Recreation and Travel Management

Recreation activities such as OHV use can disturb soil and vegetation and contribute to the spread and establishment of noxious weeds, which would degrade potential owl habitat. Other dispersed recreational activities such as fishing, hiking, and camping would have minimal disturbance to potential habitat.

Effects from Lands and Realty Management

The nature and type of impacts on Mexican spotted owl habitat from land tenure and land use authorizations would be similar to those described under Vegetation Management. ROW exclusion and avoidance area designations would limit impacts on potential habitat. Old growth forest and woodlands serve as potential habitat for the Mexican spotted owl; these areas would be managed as ROW avoidance, which would limit the number of land use authorizations which could potentially fragment or degrade suitable habitat.

Effects from Energy and Minerals Management

Energy development activities, such as construction of well pads, pipelines, and access roads could impact potential Mexican spotted owl habitat within the planning area by means of habitat removal or alteration (e.g. removal of trees, snags, logs and shade canopy). Impacts on potential habitat would be reduced by implementing a CSU within old growth forests.

Effects from Areas of Critical Environmental Concern Management

The BLM would designate 13 ACECs in the GJFO planning area under the PRMP, encompassing 123,400 acres. These designated areas would be closed to wood harvest, mineral materials sales, and non-energy leasable mineral exploration and development. Other restrictions include travel route closures or limitations, ROW avoidance or exclusion areas, recreation restrictions, surface disturbance stipulations, and fluid mineral leasing closures. Where these ACEC's overlap potential habitat these actions would help to further protect owl and prey habitat.

Cumulative Effects

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the proposed action are not considered in cumulative analysis because they will be subject to separate consultation, in accordance with Section 7 of the ESA. Cumulative effects address the impact of implementing the RMP in combination with other future non-federal actions outside the scope of this RMP, either in the planning area or next to it.

Historically, the cumulative effects of wildland fires, timber extraction, ski-area development, urban development, and road construction have reduced the abundance of old-growth spruce-fir forest, which has affected Mexican spotted owl and its prey. Such activities are likely to continue in the future; however, those activities which occur in the planning area are not likely to have a great impact on the species, as limited suitable habitat occurs within the GJFO boundary.

4.2.5 Canada Lynx

Assumptions and Methods of Analysis

Canada Lynx have been recorded on US Forest Service-administered lands adjacent to the GJFO planning area. However, primary habitat for the species occurs only in small pockets on high-elevation BLM lands, and suitable habitat within the planning area is limited. Therefore, impact analysis is based on how the PRMP would directly or indirectly maintain the condition of habitat that is potentially suitable and offer protections for the species should it occur in the GJFO.

Conservation Planning (Section 7 [a][1] of the ESA)

The goal of biological resources management (including for ESA-listed species) in the PRMP is summarized in **Table 2-1**. The goals for protecting special status wildlife species, including the Canada lynx, are also presented in **Table 2-1**. The goals presented there are the same for all ESA-listed species considered in the PRMP and this BA. Additionally, **Table 2-1** includes the objectives, management actions, and conservation measures of the BLM proposed plan to achieve the goal.

The PRMP is primarily a landscape-level, programmatic-level document. The stipulations and conservation measures for the Canada lynx and the BMPs described in Appendix H of the PRMP are not comprehensive. New conservation measures may be developed at the project level.

Objectives

The following objective from the PRMP directly relates to the Canada lynx (see **Table 2-1**):

- Maintain and improve BLM-managed portions of Lynx Analysis Units for Lynx habitat

Actions and Surface Disturbance Restrictions
The following action from the PRMP directly relates to the Canada lynx (see **Table 2-1**):

- Within lynx (*Lynx canadensis*) habitat in Lynx Analysis Units:
    - Manage timber harvest consistent with the August 2013 Lynx Conservation Assessment and Strategy and
    - Limit the expansion of consistent snow compaction unless it serves to consolidate use and improve lynx habitat.

BMPs for Management Actions
Appendix H of the PRMP includes a number of standard operating procedures and BMPs applicable to the management actions proposed under the PRMP. The BMPs and conditions of approval described in Appendix H that would benefit Canada lynx habitat are those aimed at protecting soils, vegetation, and special status species. No BMPs specifically address Canada lynx.

Direct and Indirect Effects
There would be no impact on Canada lynx from ACECs, air and climate resources; soils management, wild horse management; cultural resources, paleontological resources, visual resources, lands with wilderness characteristics, lands and reality, wild and scenic rivers, wilderness study areas, National Trails, national, state, and BLM byways; Native American tribal uses; public health and safety; socioeconomics; and environmental justice. These resource programs are not discussed further.

Effects from Water Resource Management
Decisions related to water resource management would work towards protecting, preserving, and enhancing the watershed function. Stipulations which restrict or prohibit surface disturbing activities within stream corridors would help to maintain potential habitat for lynx prey. Riparian and wetland shrub communities found in valleys, drainages, wet meadows, and moist timberline locations may support important prey resources for lynx (Noss and Cooperrider 1994). Lynx transplanted to Colorado in 1999 are frequently located in well-developed riparian and valley wetland shrub habitats of the upper montane and subalpine zones (Ruggiero et al. 2000).

Effects from Vegetation Management
Desired vegetation management objectives include emphasizing the perpetuation of late- to mid seral plant communities that provide suitable habitat for wildlife. Current acreage of old growth woodlands would be maintained and managed as ROW avoidance areas which would benefit potential habitat for lynx and associated prey.

Effects from Fish and Wildlife Management
In general, fish and wildlife management would improve and maintain habitat throughout the decision area. Applying stipulations to reduce or mitigate surface-disturbing activities within wildlife corridors and wildlife priority habitats may help support prey populations.

Effects from Special Status Species Management
Actions and stipulations proposed for the benefit of special status species (as described throughout this analysis) would benefit the Canada lynx. Actions specific to the lynx include: managing timber harvest consistent with the August 2013 Lynx Conservation Assessment and Strategy, and limiting the expansion of consistent snow compaction unless it serves to consolidate use and improve habitat. Both actions would only apply to lands within the lynx analysis unit.

Effects from Wildland Fire Management
The PRMP would utilize a full range of wildfire management actions from full suppressions to resource benefits on unplanned ignitions. This strategy is consistent with the conservation measures for wildland fire as identified in the Canada Lynx Conservation Assessment and Strategy (Interagency Lynx Biology Team 2013). Specifically, these measures emphasize maintaining fire as an ecological process in lynx habitat and considering the use of mechanical or burn prescriptions to restore fire as an ecological process or to maintain specific lynx and/or prey species habitat components.

The effects of wildfire on Canada lynx would depend on the severity and extent of the fire. Direct species mortality is unlikely, as individuals are highly mobile. Wildfire may result in short term decreases in suitable habitat for lynx and prey, due to reduced cover and forage. However, long-term benefits may include increases in the extent of early successional forest stands on burned areas and resulting in increased forage for prey. After stand-replacing fires, lodgepole pine can regenerate in dense, even-aged stands that are favored by snowshoe hares, the lynx's preferred prey (Ellsworth and Reynolds 2006).

Effects from Forestry Management
Known lynx habitat would be identified as unsuitable for harvest in the site specific forest/woodland management plans. As such, effects from forestry management on the Canada lynx would be negligible.

Effects from Livestock Grazing Management
Potential impacts on Canada lynx habitat from livestock grazing include habitat disturbance, soil compaction, erosion, sedimentation, and weed spread. However, there is minimal overlap between grazing allotments managed and covered under the GJFO RMP and suitable habitat for the lynx. No adverse effects are anticipated

Effects from Recreation and Travel Management
Dispersed recreation generally has limited or negligible effects on vegetation conditions valued by lynx and prey species. Indirect effects (such as snow compaction) from winter recreational uses and activities such as snowmobiling, cross country skiing, and snowshoeing may occur.

Research on the effect of over-snow motorized travel and snow compaction is conflicting. The Canada Lynx Conservation Assessment and Strategy (Interagency Lynx Biology Team 2013) suggests that increased competition has contributed to the decline of lynx populations. As a result it was recommended in the Canada Lynx Conservation Assessment and Strategy, to which the BLM is a signatory, that federal agencies limit over-snow travel in lynx habitat. Bunnell et al. (2006) confirmed that coyotes do use compacted trails to travel in heavy snow. However, research by Kolbe found little evidence of compacted trails causing increased competition (Kolbe et al. 2007). The PRMP, in combination with the Southern Rockies Lynx Amendment (which includes National Forest System lands adjacent to the decision area), limits the expansion of consistent snow compaction unless it serves to consolidate use and improve lynx habitat. This would provide the BLM with flexibility to monitor over-snow travel and lynx habitat and respond accordingly to limit impacts.

Effects from Lands and Realty Management
Land and realty management actions, such as ROW authorizations, can increase habitat fragmentation and allow for direct removal of habitat, conversion of habitat to other habitat types, and weed invasion. Current acreage of old growth woodlands would be maintained and managed as ROW avoidance areas which would benefit habitat for lynx and associated prey by limiting this type of activity in potential habitat.

Effects from Energy and Minerals Management
Energy development activities can cause direct and indirect impacts on lynx and their habitats. Fluid mineral leasing could occur in the vicinity of the Lynx Analysis Unit, which could lead to habitat avoidance. A CSU would be applied in old growth forests, which would reduce impacts on lynx and potential habitat.

Additional management actions to emphasize education may increase the appreciation of special status species and their habitats and subsequently reduce impacts.

Cumulative Effects
Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the proposed action are not considered in cumulative analysis because they will be subject to separate consultation, in accordance with Section 7 of the ESA. Cumulative effects address the impact of implementing the RMP in combination with other future non-federal actions outside the scope of this RMP, either in the planning area or next to it.

Historically, the cumulative effects of timber extraction, ski-area development, urban development, and road construction have reduced the abundance of old-growth spruce-fir forest, which has affected lynx and its prey. Areas of prime snowshoe hare habitat have been impacted by these types of activities, which has in turn affected lynx populations (Ellsworth and Reynolds 2006). Such activities are likely to continue in the future; however, those activities which occur in the planning area are not likely to have a great impact on the species, as limited suitable habitat occurs within the GJFO boundary.

4.2.6 Western Yellow-Billed Cuckoo

Assumptions and Methods of Analysis

Assumption and methods of analysis are similar to those described in Section 4.1.2.

Conservation Planning (Section 7 [a][1] of the ESA)

The goal of biological resources (including ESA-listed species) management in the PRMP is summarized in **Table 2-1**. The goals for protecting special status wildlife species, including western yellow-billed cuckoo, are also presented in **Table 2-1**. The goals presented there are the same for all ESA-listed species considered in the PRMP and this BA. Additionally, **Table 2-1** includes the objectives, management actions, and conservation measures of the GJFO proposed plan to achieve the goal.

The PRMP is primarily a landscape-level, programmatic-level document. The stipulations and conservation measures below for the western yellow-billed cuckoo, as well as the BMPs described in Appendix H, are not comprehensive. New conservation measures may be developed during Section 7 consultation at the project level.

Objectives

The following objective from the PRMP directly relates to the yellow-billed cuckoo (**Table 2-1**):

- Maintain and improve BLM lands for yellow-billed cuckoo habitat

Actions and Surface Disturbance Restrictions

The following actions from the PRMP are directly related to the yellow-billed cuckoo (see **Table 2-1**):

- Where large stands of cottonwoods occur, develop management plans to restore or improve cuckoo habitat and increase canopy cover and mid-story tree and shrub cover.
- No surface occupancy or use is allowed within 400 meters (1,312 feet) of the ordinary high-water mark (bank-full stage) or within 100 meters (328 feet) of the 100-year floodplain (whichever area is

greatest) on the following major rivers: Colorado, Dolores, and Gunnison.

- Prohibit surface occupancy and surface disturbing activities with a minimum distance of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage). Where the riparian corridor width is greater than 100 meters (328 feet) from bank-full, prohibit surface occupancy and surface disturbing activities within the riparian zone.
- Conserve mature riparian forests (e.g. cottonwood [*Populus deltoids*] galleries) in suitable habitat to maintain their integrity for use as bald eagle (*Haliaeetus leucocephalus*) nesting, roosting, or perching substrate.

Colorado Standards for Public Land Health
The Colorado Public Land Health Standards are applied on a landscape scale and relate to the potential of the landscape. Standards 1, 2, 3, and 4 would directly apply for promoting the conservation of western yellow-billed cuckoo habitat.

Specifically, Standard 1 applies to the desire for upland soil moisture conditions to sustain optimal plant growth and vigor for vegetation which would support healthy habitats. Standard 2 monitors riparian systems associated with both running water and standing water function properly and have the ability to recover from major disturbance, such as fire, severe grazing, and 100-year floods. Standard 3 promotes the health of native plant and animal communities at the community and population levels. Standard 4 establishes BLM standards for protecting and enhancing special status, threatened and endangered (federal and state), and other species.

BMPs for Management Actions
Appendix H of the PRMP includes a number of standard operating procedures and BMPs that are applicable to the implementation of management actions proposed under the PRMP. The BMPs and conditions of approval described in Appendix H that would benefit western yellow-billed cuckoo and riparian habitat include those aimed at protecting soils, vegetation, special status species, water resources, riparian habitat and wetlands, fire management, forestry, and livestock grazing.

Direct and Indirect Effects
The following resources, resource uses, special designations, and support management categories would have no effect on western yellow-billed cuckoo and are not discussed further: air and climate resources; soils; wild horse management; cultural resources; paleontological resources; visual resources; lands with wilderness characteristics; lands and reality; wilderness study areas; ACECs; National Trails; national, state, and BLM byways; Native American tribal uses; public health and safety; socioeconomics; and environmental justice. These resource programs are not discussed further.

Effects from Water Resource Management
Decisions related to water resource management would work towards protecting, preserving, and enhancing the watershed function. Stipulations which restrict or prohibit surface disturbing activities within stream corridors would limit loss of native vegetation along riparian corridors, which serves as nesting and foraging habitat for the species.

Effects from Vegetation Management
Riparian vegetation management follows Land Health Standard 2, which emphasizes properly functioning riparian systems which capture sediment and provide forage habitat and biodiversity. Where conditions are appropriate, the BLM would allow for removal of tamarisk *(Tamarix* spp.*)*, non-native elms *(Ulmus* spp.*)*, and Russian olive *(Elaeagnus angustifolia)* material for biomass or personal use. Tamarisk has become increasingly prevalent within riparian corridors in the planning area, and can pose a serious threat to yellow-billed cuckoo habitat by replacing native riparian vegetation structures (USFWS 2014i). As such, removal of this invasive species would benefit the yellow-billed cuckoo and its habitat.

Stipulations which restrict or prohibit surface disturbing activities within stream corridors would limit loss of native vegetation along riparian corridors, which serves as nesting and foraging habitat for the species.

Effects from Fish and Wildlife Management
In general, fish and wildlife management would improve and maintain habitat throughout the decision area. This includes actions specific to the protection of aquatic and riparian habitats (such as the Colorado River where the yellow-billed cuckoo critical habitat is found). Actions intended to protect fish species (such as TL for in-channel stream work) would likely also benefit the yellow billed cuckoo.

Effects from Special Status Species Management
Actions and stipulations proposed for special status species would benefit the yellow-billed cuckoo, effects are similar to those described under Effects from Fish and Wildlife Management.

Effects from Fire and Fuels Management
Depending on the extent, location, severity, and seral type affected, unplanned ignitions would have short-term impacts on yellow-billed cuckoo habitat. Unplanned fires could remove or degrade habitat for yellow-billed cuckoo, subsequently reducing population viability.

A significant threat to the yellow-billed cuckoo is habitat loss and degradation due to nonnative vegetation conversion. Fuels management could include removal of tamarisk and Russian olive. Such activities would result in short-term impacts on the species (temporary displacement and avoidance), with long-term benefits (establishment of native riparian woodland vegetation, which supplies essential food and cover).

Increased human activity and noise associated with wildland fire management, prescribed fire, and fuels management could increase the likelihood for disturbance or displacement. These activities could promote habitat avoidance or changes to survival or reproduction caused by changes to nesting, breeding, foraging, or roosting behavior. However these impacts would be short in duration and limited in scope.

A large fire that would require extensive suppression operations could result in long-term effects on riparian-dependent species and their habitats. Smaller fires that would require less extensive suppression operations would generally avoid these long-term effects. Cottonwood galleries and areas with dense tamarisk infestations would generally be at a higher risk of fire. The PRMP would emphasize a suite of fuels treatments and would provide the most management flexibility, resulting in increased protection for special status species (such as the yellow-billed cuckoo) and their habitat from fire. Not all riparian corridors within the planning area are potential habitat for the yellow-billed cuckoo, therefore not all fire and fire suppression activities along streams and rivers would result in impacts to the species.

Effects from Forestry Management

The effects from forestry management would be similar to those of vegetation management. Much of the Dolores River corridor is closed to wood product sales or harvest and the riparian corridors along the Colorado and Gunnison rivers are protected by NSO stipulations for surface-disturbing activities. As such, large scale forest harvest would not occur in riparian areas and no adverse effects to the yellow-billed cuckoo or its proposed critical habitat are anticipated from forestry management.

Effects from Livestock Grazing Management

Livestock often use riparian areas for water and shade, which may cause greater impacts on these areas through concentrated use. Livestock could alter stream functionality and vegetation structural diversity. The loss or reduction of streamside vegetation from grazing can affect the suitability of habitat for yellow-billed cuckoo breeding and prey populations.

Range improvements, including the construction of stock ponds, could promote vegetation loss, soil compaction, and erosion in the areas around the ponds. The source would be livestock congregating around these areas that were previously less intensively grazed. However, depending on the placement of stock ponds, the development of livestock water sources may draw livestock away from existing natural water features and sensitive riparian habitat that have vulnerable soils and that livestock now use as a water source.

Under the PRMP, the BLM would identify appropriate utilization levels and may implement changes in livestock use if major impacts on sensitive species occur.

Effects from Recreation and Travel Management

Effects from recreation management are related to the duration, intensity, and expanse of recreation. Damage to riparian resources from recreation could affect habitat suitability for the yellow-billed cuckoo. Use of trails to access fishing along streams and camping along waterways could disturb birds, causing habitat avoidance, compact soil, exacerbate erosion and sedimentation into waterways, and reduce vegetation cover. Furthermore, since riparian areas and waterways are popular recreation spots, increased demand for access to these areas is expected as the population increases, causing greater impacts on riparian species.

However, the 2014 Determination of Threatened Status Final Rule (USFWS 2014i) found there were no known or anticipated threats to the species resulting from overutilization for recreational purposes. While recreation activities are anticipated to increase in the planning area, effects to yellow-billed cuckoo habitat would likely be localized and short-term.

Effects from Energy and Minerals Management

Energy exploration and mineral development along the Colorado, Gunnison, and Dolores Rivers could potentially affect the yellow-billed cuckoo and its proposed critical habitat by means of habitat loss or degradation. However, NSO stipulations would prohibit surface occupancy or use within 400 meters of the ordinary high water mark (bank-full stage) or within 100 meters of the 100-year floodplain (whichever is greatest) on the three rivers which contain suitable habitat for the yellow-billed cuckoo. This would prevent loss of habitat from new leasing. COA and BMPs would help to mitigate the effects of energy development in areas where existing leases overlap with proposed yellow-billed cuckoo habitat.

Additionally, closing the three river corridors to mineral material disposal and non-energy solid mineral leasing and development would help further reduce potential impacts of energy development on proposed yellow-billed cuckoo habitat.

Effects from Wild and Scenic Rivers Management

Under the PRMP, WSR management would have the greatest impacts on riparian-dependent and special status species. It would do this by protecting the free-flowing nature of the segments, maintaining the Outstandingly Remarkable Values for which the segment was found eligible and prohibiting actions that would modify the setting or level of development such that the tentative classification would change.

Under the PRMP, a portion of the Dolores River would be determined suitable for inclusion in the National Wild and Scenic Rivers System. Proposed yellow-billed cuckoo critical habitat does not occur along this segment, and no individuals have been recorded in the area. While it is possible the species may

utilize this area, interim management guidelines and management measures would have only a minor beneficial effect.

Cumulative Effects

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the proposed action are not considered in cumulative analysis because they will be subject to separate consultation, in accordance with Section 7 of the ESA. Cumulative effects address the impact of implementing the RMP in combination with other future non-federal actions outside the scope of this RMP, either in the planning area or next to it.

The CIAA used to analyze cumulative impacts on special status species, including western yellow-billed cuckoo in the PRMP, extends outside the planning area, following fourth-order watershed boundaries that completely or partially overlap the planning area. The fourth-order watersheds were used as the basic unit of analysis because the scope of cumulative influence would be at the watershed scale and is not expected to extend beyond this scale.

Past, present, and reasonably foreseeable future actions and conditions in the CIAA, both on public and private land, that have affected and will likely continue to affect western yellow-billed cuckoo are mineral exploration and development, forestry, grazing, recreation, road construction, ROWs, prescribed and wildland fires, land planning efforts, vegetation treatments, habitat improvement projects, insects and disease, and drought. Many of these activities create conditions that cause or favor other vegetation to take over.

The scope of analysis for cumulative impacts for the western yellow-billed cuckoo takes in the riparian areas along the Gunnison River and the Colorado River Basin and its tributaries. This includes private and state lands to account primarily for cumulative effects on western yellow-billed cuckoo and its habitat. Climate change in the CIAA could cause an increase or decrease in temperatures and precipitation, which would affect soil conditions, vegetation distribution, and overall riparian habitat health. Such changes would alter the conditions to which vegetation communities are adapted, potentially creating conditions that could favor certain species or communities, weeds, or pests (Hellmann et al. 2007).

Under the PRMP, impacts on riparian habitat would be minimized to the extent practical and feasible through restrictions on uses and activities. Vegetation conditions would be improved through treatments, weed prevention and control, habitat improvements, use of prescribed and wildland fire, and proper grazing practices. Under the PRMP, the BLM would move toward improving land health and achieving priority habitat objectives.

4.3 PROPOSED SPECIES

4.3.1 Gunnison Sage-Grouse

Assumptions and Methods of Analysis

Methods of analysis and assumptions are similar to those described above in Sections 4.1.2 and 4.2.3. Indicators of impacts on Gunnison Sage-Grouse and the measurements used to describe the impacts (where available or appropriate) are described below:

Direct Habitat Loss

Acres of habitat lost. Direct habitat loss results when habitat is destroyed or converted to a form that is unsuitable for the impacted species. Direct habitat loss can be a short-term or long-term impact.

Habitat Fragmentation

Habitat fragmentation occurs when contiguous habitat is broken into smaller blocks by surface-disturbing activities. Habitat fragmentation could lead to the following:

- Likelihood of reduced habitat quality and interference with movement patterns, leading to a decreased ability to breed or overwinter successfully to a degree that would lead, in turn, to substantial population declines
- Likelihood that individual habitat blocks would be reduced
- Likelihood of increased percentage of edge habitat on smaller blocks when compared to larger blocks

Disruption to Species

Direct mortality of species, including predation, collisions with structures (fences, towers, vehicles), and disease; interference with movement patterns due to fragmented landscapes; short- or long-term displacement and physiological or behavioral influences (avoidance of otherwise functional habitats).

Habitat Degradation

Weed infestation and overstory reductions indicators (reductions in herbaceous ground cover, lack of residual cover, and change in understory plant composition).

Miles disturbed (for limits on travel management, recreation, unleased areas).

Miles/acres disturbed. (It is assumed that habitat next to roads that are impacted by dust and dust suppression activities would have some lower level of understory next to the impacted habitat.)

Habitat Restoration or Improvement
The likelihood of improving habitat quality (e.g., increased species diversity, increased habitat connectivity, and decreased weeds).

Habitat Protection
Acres protected through stipulations, withdrawals, closures, and special designations (e.g., ACECs). Also, the likelihood of reduced or prohibited surface disturbance.

In addition to the assumptions listed under Section 4.1.2, the following would apply specifically to Gunnison Sage-Grouse:

- In general, Gunnison Sage-Grouse are highly sensitive to habitat fragmentation, development, or changes in habitat conditions. This is because Gunnison Sage-Grouse inhabit and require large, intact sagebrush ecosystems, and are especially sensitive to disturbance and human presence.
- There is little to no fluid mineral potential within mapped critical habitat for the Piñon Mesa population. Mapped occupied habitat is no leasing in the PRMP for all federal minerals. Because of the low potential for oil and gas development, it is assumed no impacts will occur.

Unavailable Information
A complex range of factors will influence the response or fate of individual birds to impacts, thus, there is uncertainty in generating specific metrics for anticipated adverse effects (such as number of expected mortalities of individuals, or number of habitat acres temporarily or permanently lost or temporarily affected). Factors contributing to this uncertainty include, but are not limited to:

1. Inability to accurately predict the location, frequency, timing, duration, etc. of future projects;
2. Inability to accurately measure the nature or extent of potential effects;
3. Limited ability to pinpoint the source, or combined sources, of effect;
4. Accounting for confounding or stochastic events such as drought;
5. Sources of risk that emerge outside of federal lands covered under the PRMP.

Conservation Planning (Section 7[a][1] of the ESA]
The goal of biological resources (including ESA-listed species) management in the PRMP is summarized in **Table 2-1**. The goals for protecting special status wildlife species, including Gunnison Sage-Grouse, are also presented in **Table 2-1**. The goals presented there are the same for all ESA-listed species considered in the PRMP and this BA. Additionally, **Table 2-1** includes the

objectives, management actions, and conservation measures of the GJFO Proposed RMP to achieve the goal. The PRMP is primarily a landscape-level, programmatic-level document.

The stipulations and conservation measures below for Gunnison Sage-Grouse, as well as BMPs described in Appendix H, are not comprehensive. New conservation measures may be developed at the project level.

Objectives
One objective directly related to Gunnison Sage-Grouse is included in the PRMP (**Table 2-1**):

- Advance the conservation of Gunnison and Greater Sage-Grouse and their habitat in accordance with current national, state, and local working group recommendations and policy as well as the most current scientific literature and research.

Actions and Surface Disturbance Restrictions
Twenty-six management actions and stipulations directly related to Gunnison Sage-Grouse are included in the proposed plan (**Table 2-1**):

- Consistent with current guidance for sagebrush-dependent species, improve areas of poor quality nesting habitat by implementing the following actions, including but not limited to:
    - In areas where species diversity is low seed area with grasses and forbs, with an emphasis on forbs if brood-rearing occurs in the area, accompanied by light disking and interseeding, or drill seeding.
    - Where sage is decadent and does not meet habitat objectives, conduct thinning by roller-chopping, light disking, Dixie Harrow, Lawson Aerator or other methods.
    - Conduct vegetation treatments to retain residual cover through fall and winter into nesting season.
- When reseeding roads, primitive roads and trails, use appropriate seed mixes (appropriate for Sage-Grouse ecological conditions) and consider the use of transplanted sagebrush.
- Reduce routes through currently suitable or potentially suitable Gunnison and Greater Sage-Grouse habitat by reducing routes through sage brush parks, with an emphasis on routes that bisect sage brush parks.
- Improve brood-rearing habitats by implementing the following action:

  - Restore old ponds or construct new ponds in areas lacking water, while minimizing potential for promoting mosquito breeding habitat at elevations below 8,000 feet.

- Improve lek areas by mechanically treating historic lek areas where sagebrush density has increased.
- To reduce disturbance to Gunnison or Greater Sage-Grouse, close duplicative or redundant routes within Sage-Grouse habitat and within 4 miles of a lek.
- Remove/modify raptor perches, in Gunnison and Greater Sage-Grouse habitat (trees, fences, dry-hole markers, and power poles).
- Monitor measureable objectives and evaluate grazing management to assure that management actions are achieving Sage-Grouse habitat objectives.
- Design any new structural range improvements to conserve, enhance, or restore Sage-Grouse habitat through an improved grazing management system relative to Sage-Grouse objectives. Structural range improvements, in this context, include but are not limited to: cattleguards, fences, enclosures, corrals or other livestock handling structures; pipelines, troughs, storage tanks (including moveable tanks used in livestock water hauling), windmills, ponds/reservoirs, solar panels, and spring developments.
- To reduce Sage-Grouse strikes and mortality, remove, modify, or mark fences in high risk areas. When fences are necessary, require a Sage-Grouse-safe design.
- Locate supplements (salt or protein blocks) in a manner designed to conserve, enhance, or restore Sage-Grouse habitat.
- Offer temporary use on a case-by-case basis in allotments where grazing preference has been relinquished, or non-use warrants to rest other allotments that include important Sage-Grouse habitat.
- Apply TL-16 (Occupied Sage-Grouse Winter Habitat) or TL-17 (Sage-Grouse Leks) to vegetation management treatments according to the type of seasonal habitats present in a priority area.
- Monitor after vegetation treatments for success in meeting objectives and monitor and control invasive vegetation after vegetation treatments in Sage-Grouse habitat.
- Apply post-vegetation treatment management and monitoring to ensure long term persistence of seeded native plants. Outline temporary or long-term changes in livestock grazing, wild horse and burro, and travel management, etc., to achieve and maintain vegetation management objectives to benefit Sage-Grouse and their habitats.

- Design vegetation treatments in Sage-Grouse habitats to strategically reduce wildfire threats in the greatest area. This may involve spatially arranging new vegetation treatments with past treatments, vegetation with fire-resistant seral stages, natural barriers, and roads in order to constrain fire spread and growth. This may require vegetation treatments to be implemented in a more linear versus block design.
- Include Sage-Grouse habitat parameters as defined by Connelly et al. (2000), Hagen et al. (2007) or if available, state and federal Sage-Grouse conservation and recovery plans and appropriate local information in habitat restoration objectives. Make maintaining these objectives within priority Sage-Grouse habitat areas a high restoration priority.
- Choose native plant seeds for vegetation treatments based on availability, adaptation (site potential), probability for success, and the vegetation management objectives for the area covered by the treatment. Where probability of success or native seed availability is low, use species that meet soil stability and hydrologic function objectives as well as vegetation and Sage-Grouse habitat objectives.
- Manage the following areas to benefit Sage-Grouse habitat:
    - Wildlife Emphasis Areas:
        - Glade Park and
        - Sunnyside.
    - ACECs:
        - Roan and Carr Creeks
- Identify the following as ROW exclusion areas:
    - Within a 0.6-mile radius of Sage-Grouse leks.
- Identify the following as ROW avoidance areas:
    - Sage-Grouse occupied habitat and
    - Within a 4-mile radius of Sage-Grouse leks.
- **No Leasing:** *Sage-Grouse.* Close all occupied Gunnison Sage-Grouse habitat (currently 10,600 acres) and greater Sage Grouse habitat within one mile of an active lek to fluid mineral leasing and geophysical exploration.
- **No Leasing:** *Split-estate.* Manage 12,200 acres of Private and State surface/federal fluid mineral estate in all occupied Gunnison Sage-Grouse habitat and greater Sage Grouse habitat within one mile of an active lek as closed to fluid mineral leasing and geophysical exploration.

- **STIPULATION** TL-16: *Occupied Sage-Grouse Winter Habitat.* Prohibit surface occupancy and surface-disturbing activities in occupied Sage-Grouse winter habitat from December 16 to March 15.
- **STIPULATION** NSO-25: *Sage-Grouse Leks, Nesting, and Early Brood-rearing Habitat.* Prohibit surface occupancy and surface-disturbing activities within 4 miles of an active lek or within Sage-Grouse nesting and early brood-rearing habitat.
- **STIPULATION** TL-17: Sage-Grouse Leks. Prohibit surface occupancy and surface-disturbing activities within 4 miles of Sage-Grouse leks from March 1 to June 30.

Additional management actions indirectly related to the protection of the Gunnison Sage-Grouse are described in **Table 2-1** and incorporated by reference.

Colorado Standards for Public Land Health

The Colorado Public Land Health Standards are applied on a landscape scale and relate to the potential of the landscape. Of the five standards listed, Standards 1, 3, and 4 would directly apply for promoting the conservation of Gunnison Sage-Grouse. Specifically, Standard 1 applies to the desire for upland soil moisture conditions to sustain optimal plant growth and vigor for vegetation. Standard 3 promotes the health of native plant and animal communities at the community and population levels. Standard 4 establishes standards for the BLM to protect and enhance special status, threatened and endangered (federal and state), and other species.

BMPs for Management Actions

Appendix H of the PRMP includes a number of standard operating procedures and BMPs that are applicable to implementing the management actions proposed under the PRMP. The BMPs and conditions of approval described in Appendix H that would benefit Gunnison Sage-Grouse are those aimed at protecting soils, vegetation, and special status species.

Direct and Indirect Effects

There would be no effects on Gunnison Sage-Grouse from air and climate resources; wild horses; cultural resources; paleontological resources; visual resources; water resources; wild and scenic rivers; lands with wilderness characteristics; forestry; National Trails; national, state, and BLM byways; wilderness study areas; Native American tribal uses; public health and safety; socioeconomics; and environmental justice. These resource programs are not discussed further.

Effects from Soils Resource Management

The goal of soil resource management in the GJFO RMP is to ensure upland soils exhibit infiltration and permeability rates that are appropriate to soil type,

climate, land form, and geologic processes. Adequate soil infiltration and permeability allows for optimal plant growth and vigor, and minimizes runoff and erosion. As a result, this would support healthy sagebrush habitats for the Gunnison Sage-Grouse.

Effects from Vegetation Management

Under the PRMP, vegetation management and protection would impact Gunnison Sage-Grouse habitats. Management to improve and protect vegetation conditions throughout the planning area would improve vegetative cover, reduce the likelihood for erosion and sedimentation, and maintain seed banks. Most vegetation treatments would not affect Gunnison Sage-Grouse, as a timing limitation would be applied to avoid impacts during sensitive periods. Improved vegetative conditions would improve habitat for Gunnison Sage-Grouse by providing more opportunities for lekking, nesting, brood-rearing, wintering, cover, and foraging over the long term. In the short term, vegetation treatments could remove potential habitat or increase the potential for weed spread. In addition, human disturbance and noise associated with the use of heavy equipment for vegetation removal could temporarily displace Gunnison Sage-Grouse from foraging, breeding, nesting, and wintering habitats.

Gunnison Sage-Grouse habitat would be improved and maintained through vegetation treatments, prioritizing winter Sage-Grouse habitat for treatment and restoration, developing restoration plans in non-functioning habitat, reducing pinyon-juniper encroachments, increasing habitat connectivity, and managing for age class diversity. Actions to reduce pinyon-juniper woodland invasion of upper elevation sagebrush communities would benefit Gunnison Sage-Grouse that require open sage parks. Monitoring after vegetation treatments would occur to evaluate success in meeting objectives. These actions would help support health Gunnison Sage-Grouse habitats, and are consistent with the conservation measures identified in the Piñon Mesa Conservation Plan (Gunnison Piñon Mesa Gunnison Sage Grouse Partnership 2000).

Effects from Fish and Wildlife Management

The BLM would establish 10 wildlife emphasis areas on 150,000 acres to protect areas with high wildlife value and significance, focusing on protecting habitat for big game, cutthroat trout, and Sage-Grouse. This strategy would allow BLM to focus their wildlife management efforts in the areas that would be most effective to preserve and protect fish and wildlife, including Gunnison Sage-Grouse. The Timber Ridge and Glade Park wildlife emphasis areas would be of particular benefit to the Gunnison Sage Grouse, as these boundaries would overlap with occupied habitat for the species and a recently discovered Lek in the Timber Ridge area. Combined, these wildlife emphasis areas would encompass 96% of proposed occupied critical habitat and 49% of proposed unoccupied critical habitat on BLM-administered lands. The Glade Park area alone encompass 10,100 acres of Gunnison Sage-Grouse occupied proposed critical habitat; this

accounts for the majority (95%) of occupied proposed critical habitat on BLM-administered lands.

Examples of management actions that would be applied in wildlife emphasis areas include stipulations on surface-disturbing activities and recreation restrictions, as well as ROW avoidance and exclusion areas and travel closures and seasonal restrictions to maintain existing unfragmented habitat and meet wildlife objectives. Approximately 27,200 acres of the Glade Park Wildlife Emphasis Area would be subject to the CO-CSU-Wildlife Habitat stipulation, which would benefit Gunnison Sage-Grouse by restricting surface occupancy or use within this area.

Effects from Special Status Species

A suite of management actions would be implemented to conserve Gunnison Sage-Grouse under the PRMP, including habitat improvement, habitat protection, and mineral leasing stipulations and prohibitions. Nesting, brood-rearing, and lek habitat would be improved, and vegetation management actions in sagebrush would aim to conserve, enhance, and restore Gunnison Sage-Grouse habitats. Raptor perches would be removed or modified in Gunnison Sage-Grouse habitat to reduce predation. In addition, the Rough Canyon ACEC and the Glade Park and Timber Ridge wildlife emphasis areas would be managed for Gunnison Sage-Grouse habitats.

Effects from Wildland Fire Management

Depending on the extent, location, severity, and seral type affected, unplanned ignitions would have adverse impacts on Gunnison Sage-Grouse by removing or degrading habitat and/or reducing population viability. Large or intense wildfires could damage large expanses of habitat. Indirect effects could result from increased erosion, and increased potential for noxious and invasive weed establishment.

Under the PRMP, the BLM would avoid planned and unplanned fire in low-elevation cheatgrass-infested communities, which would help protect adjacent sagebrush habitats used by Gunnison Sage-Grouse. However, prescribed fire, if applied at an appropriate scale, is a viable management tool for protecting Gunnison sagebrush habitats from catastrophic wildfires (Gunnison Sage-Grouse Rangewide Steering Committee 2005). Using a variety of fuel treatments would have short-term effects on Gunnison Sage-Grouse and habitats through vegetation removal, increased likelihood of erosion and sedimentation, human presence, and the potential for habitat avoidance. In the long term, these activities would reduce the likelihood of uncharacteristically large or intense wildfires that could damage large expanses of habitat or kill or displace wildlife. In addition, the condition of upland vegetation would be improved. Cheatgrass recolonization in prescribed burned areas is a notable concern, and reseeding efforts may be necessary to reduce the potential for invasive weeds (Gunnison Sage-Grouse Rangewide Steering Committee 2005). Fuel treatment actions as

described in the PRMP may include seeding by means of aerial or ground application. Emergency stabilization and rehabilitation treatments would help to reestablish vegetation and restore habitat for Gunnison Sage-Grouse.

Increased human activity and noise associated with wildland fire suppression and prescribed fire in areas occupied by Gunnison Sage-Grouse could affect lekking, nesting, brood-rearing, wintering, or foraging behavior. Important habitats could be altered because of the use of heavy equipment, hand tools, and noise associated with intensive human activity. However, there is also a risk of habitat loss in areas where wildland fire suppression is absent or limited due to the increased potential for large and more severe wildfires. This in turn is balanced by the fact that a large fire could require extensive suppression operations, such as extensive staging areas and fire-line construction, which could themselves result in long-term effects on Gunnison Sage-Grouse and their habitats. Smaller fires that would require less extensive suppression operations would generally avoid these long-term effects.

Effects from Livestock Grazing Management

Timing and intensity of livestock grazing may affect Gunnison Sage-Grouse nesting and brood rearing success, as fall grazing can remove residual cover needed the following spring for nest and brood cover (Piñon Mesa Gunnison Sage Grouse Partnership 2000). Potential impacts of grazing and associated activities on Gunnison Sage-Grouse include direct impacts of herbivores, such as trampling of nests and eggs, altered Sage-Grouse behavior due to presence of herbivores, and impacts on their behavior from structures associated with grazing management (Beck and Mitchell 2000). Additionally, mortality associated with fence collisions has been documented in lesser prairie-chickens *(Tympanuchus pallidicinctus)* in Oklahoma (Wolfe et al. 2007) and Greater Sage-Grouse in Idaho (Stevens 2011). No specific data regarding Gunnison Sage-Grouse fence-related mortalities is available; however it is assumed the species is also killed by fence collisions (USFWS 2013d). Within the planning area, 9.2 miles of mapped fences are located within 4 miles of active leks on BLM lands.

In areas that are available for livestock grazing, there could be more impacts on Gunnison Sage-Grouse than in areas where livestock grazing is excluded. Under the PRMP, all Gunnison Sage-Grouse proposed critical habitat would be open to grazing, resulting in an increased likelihood for impacts. **Table 4-1**, Existing Land Health Assessment Conditions by Proposed Occupied and Unoccupied Gunnison Sage Grouse Critical Habitat on BLM Lands, provides an overview of current rangeland health conditions. For a detailed description of rangeland health conditions by allotment, see Appendix A, Rangeland Health Conditions in Gunnison Sage-Grouse Critical Habitat.

Table 4-1
Existing Land Health Assessment Conditions by Proposed Occupied and Unoccupied Gunnison Sage-Grouse Critical Habitat on BLM Lands

Indicator	Occupied Habitat	Unoccupied Habitat
Acres Meeting Land Health Standards	7,300	46,100
% Habitat Meeting Land Health Standards	69%	83%
Acres Meeting Land Health Standards With Problems	2,626	2,600
% Habitat Meeting Land Health Standards With Problems	25%	5%
Acres Not Meeting Land Health Standards	300	2,300
% Habitat Not Meeting Land Health Standards	3%	4%

Source: BLM 2010a

The PRMP includes a number of management actions to incorporate Gunnison Sage-Grouse habitat objectives and management considerations into livestock grazing management. Such measures would help to improve vegetation condition of rangeland areas and could reduce the likelihood of nonnative invasive species introduction or spread. In addition, removing, modifying, or marking fences in high risk areas would help to reduce the threat of injury or mortality to Gunnison Sage-Grouse.

As shown in **Table 4-1**, the majority of proposed critical habitat is currently meeting land health standards. However, 28% of occupied habitat and 9% of unoccupied habitat is categorized as meeting the standards with problems, or not meeting the standards. Despite the management actions described above, reductions in herbaceous cover that fall below the Rangewide Conservation Plan habitat guidelines (Gunnison Sage-grouse Rangewide Steering Committee 2005) are likely to continue to occur at times. Adverse effects from trampling of eggs or nests may also occur. This is thought to be rare but the impact is not discountable.

Effects from Recreation and Travel Management

Impacts from recreational use would include casual use activities such as nonmotorized recreation or dispersed camping. Such activities are not subject to site-specific environmental review and vegetation impacts would not be apparent until after damage has occurred. Examples of direct impacts on Gunnison Sage-Grouse from casual use include habitat loss, fragmentation, and direct mortality from collisions with vehicles. Impacts are more likely to occur in easily accessible areas where visitation would be high, and in areas open to intensive motorized use, as cross-country travel facilitates weed spread as well

as increasing habitat fragmentation. In general, the more acres of routes in the area, the greater the likelihood of habitat fragmentation and disturbance to species and habitats as high concentrations of human use typically occur on or immediately adjacent to motorized routes.

Within proposed occupied habitat, 18.4 miles of routes would be open to public use (including 1.1 miles of county-maintain roads), and 12.3 miles of routes would be restricted to administrative and permitted use only. 0.4 miles of routes would be proposed for closure and rehabilitation. Within unoccupied habitat, 68.8 miles of routes would be open to public use (including 14.7 miles of county-maintained roads), and 29.6 miles of routes would be restricted to administrative and permitted use only. 19.9 miles of routes would be proposed for closure and rehabilitation. Habitat loss, degradation, and fragmentation from roads are a major threat to Gunnison Sage-Grouse (USFWS 2013d). The collective influences of fragmentation and disturbance from roads reduces the effective habitat as they are avoided by sage-grouse (Knick et al 2011; USFWS 2013d). Impacts related to behavior disruption may occur (particularly along routes occurring in occupied habitat). However, seasonal limitations and route closure of routes within 4 miles of leks would reduce impacts. In addition, the Timber Ridge Wildlife Emphasis Area would only be open to foot and horseback use, which is expected to reduce potential impacts to the lek in this area.

Activities authorized under SRPs could disrupt Gunnison Sage-Grouse, but all SRPs would contain standard stipulations appropriate for the type of activity and may include additional stipulations necessary to protect land or resources, including Gunnison Sage-Grouse.

Effects from Lands and Reality Management

Construction and operation of ROW facilities, such as pipelines, roads, and transmission lines, may result in habitat loss, fragmentation, and degradation. Surface disturbance during construction removes vegetation and important habitat components for Gunnison Sage-Grouse and, in most cases, renders the habitat unsuitable. ROWs, such as those for roads and industrial facilities, may lead to permanent loss of Gunnison Sage-Grouse habitat. Other ROWs, such as those for pipelines or buried power lines, may lead to a more short-term loss of habitat if the area were reclaimed after construction. However, following natural succession regimes, sagebrush communities would take 20 to 30 years to return to preconstruction conditions. In addition to removing vegetation, long-term occupancy of structures and facilities leads to direct habitat loss.

ROWs may also lead to habitat fragmentation and degradation. ROW projects can reduce patch size and increase edge habitats. Since Gunnison Sage-Grouse require large blocks of intact habitat, linear disturbances reduce habitat quality. Surface disturbance can also lead to new weed infestations and spread weeds where infestations already occur. Noxious and invasive weeds are often of

lower value to wildlife, and degrade wildlife habitat by reducing optimal cover or food. Sagebrush-steppe communities are among the ecosystems most vulnerable to invasion and degradation by invasive weeds. Not only can invasive species outcompete most native plants when moisture is limited, they can also change site-specific fire ecology and result in the loss of critical shrub communities. The loss and degradation of sagebrush habitat can reduce the carrying capacity of local breeding populations of Gunnison Sage-Grouse, especially in areas where high quality sagebrush habitat is limited (Braun 1998; Connelly et al. 2000).

As such, there would likely be more impacts on Gunnison Sage-Grouse and their habitat in areas where ROWs are permitted compared to areas where ROWs are excluded or avoided.

Disruption Impacts. Both the construction and operation phases of ROW projects can lead to disruption impacts. Noise and an increase in human presence during construction may displace Gunnison Sage-Grouse into lower quality habitat and may disrupt breeding and nesting (Holloran 2005). Although construction impacts are generally short term, many impacts would continue during routine maintenance and operation of the ROWs. Gunnison Sage-Grouse would likely avoid habitat in the vicinity of infrastructure (Holloran et al. 2010), resulting in indirect habitat loss. In addition, noise and an increase in traffic during ROW operation and maintenance would disturb and likely displace Gunnison Sage-Grouse (Lyon and Anderson 2003; Holloran 2005). Avoidance of habitat would be most prevalent during levels of high human activity, such as ROW construction. Gunnison Sage-Grouse may avoid otherwise suitable habitat as the density of roads and infrastructure increases (Holloran 2005).

Avian predators, particularly raptors and corvids (i.e., crows, ravens, and magpies), are attracted to overhead utility lines because they provide perches for various activities, including hunting (Avian Power Line Interaction Committee 2006). Increased predation and harassment of Gunnison Sage-Grouse may occur from new ROW projects involving power lines or other tall structures (Connelly et al. 2004). However, the PRMP includes management to remove or modify raptor perches, thereby reducing this threat. In addition, road ROWs may increase mammalian predator densities.

Construction and operation of ROW facilities may also lead to direct mortality of Gunnison Sage-Grouse. The potential for Gunnison Sage-Grouse mortality from project construction would be low and likely limited to nesting hens or young chicks that have limited mobility. Direct mortality may occur from collisions with turbines, power lines, or meteorological towers or their supporting infrastructure, such as guy wires (Connelly et al. 2004; Beck et al. 2006). In addition, an increase of traffic on roads from ROW maintenance and operations can lead to direct mortality through vehicle collisions.

Habitat Protection. The PRMP would identify any areas within a 0.6-mile radius of any Sage-Grouse lek as a ROW exclusion area. Additionally, all occupied

Sage-Grouse habitat and areas within a 4-mile radius of Sage-Grouse leks would be identified as ROW avoidance areas. These measures would reduce or eliminate the above described impacts on Gunnison Sage-Grouse and their habitat by restricting new ROWs.

Effects from Energy and Mineral Management

Negative effects of fluid mineral development on Sage-Grouse populations are well-documented (Connelly et al. 2000; Lyon and Anderson 2003; Holloran 2005; Doherty et al 2008; Walker et al. 2007). Federal mineral estate encompasses 22,800 acres of occupied proposed critical habitat, and 76,800 acres of unoccupied proposed critical habitat; however, no fluid mineral development potential occurs within or near established Gunnison Sage-Grouse populations in the GJFO planning area, and no existing fluid mineral leases overlap with proposed critical habitat. All occupied Gunnison Sage-Grouse habitat (currently 10,600 acres) would be closed to leasing. Additionally, unoccupied habitat in the Dominguez Escalante NCA would be closed to leasing. As stated under the assumptions and methods of analysis, no mineral development is expected and as a result, no adverse impacts on Gunnison Sage-Grouse are anticipated.

Effects from Areas of Critical Environmental Concern Management

The BLM would designate 13 ACECs in the GJFO planning area under the PRMP, encompassing 123,400 acres. Of these, the Rough Canyon ACEC (2,778 acres) would be expanded to accommodate better management of the Gunnison Sage-Grouse. This area would be withdrawn from mineral entry, and managed as ROW exclusion. In addition, an NSO stipulation would be applied to protect Sage-Grouse leks, nesting, and early brood-rearing habitat. While no proposed occupied or unoccupied critical habitat occurs within the ACEC, the boundaries encompass the historical range for the species. As such, Gunnison Sage-Grouse would be protected from surface disturbance and associated impacts within this ACEC if the area was to be reoccupied in the future.

Cumulative Effects

Cumulative effects include those of future state, tribal, local, or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the proposed action are not considered in cumulative analysis because they will be subject to separate consultation, in accordance with Section 7 of the ESA. Cumulative effects address the impact of implementing the RMP in combination with other future non-federal actions outside the scope of this RMP, either in the planning area or next to it.

The CIAA for Gunnison Sage-Grouse includes follows fourth-order watershed boundaries that completely or partially overlap the planning area.

The majority of the planning area occurs within Mesa County, which has experienced significant population growth since 1987, and population forecasts expect the growth trend will continue (Colorado Division of Local Government,

State Demography Office 2013). As such, continued use and development within the planning area is expected to continue. Past, present, and reasonably foreseeable future actions and conditions on non-federal lands in the CIAA that have affected and will likely continue to affect Gunnison Sage-Grouse are as follows:

- Mineral exploration and development
- Agricultural development
- ROW and infrastructure development
- Livestock grazing
- Recreation
- Road construction
- Weed invasion and spread
- Wildland fires
- Drought
- Farming

In general, resource use activities have cumulatively caused habitat removal, fragmentation, soil compaction, erosion, increased human presence, and weed spread as described above.

Many natural influences create conditions that cause vegetation changes. For example, wildland fire removes vegetation, which makes affected areas more susceptible to weed invasion and soil erosion. Droughts reduce vegetation health, leaving it prone to insect infestation or disease. Climate change in the CIAA could increase or decrease temperatures and precipitation. This would affect soil conditions, vegetation distribution, water flows, water quality, and water temperature (Ficklin et al. 2010; Lenihan et al. 2003; McKenney et al. 2007; Hamann and Wang 2006). Such changes would alter the conditions to which vegetation communities are adapted, potentially creating conditions that favor certain species or communities, weeds, or pests (Hellmann et al. 2007) and potentially creating unsuitable conditions for Gunnison Sage-Grouse.

4.4 CANDIDATE SPECIES

4.4.1 Greater Sage-Grouse

Assumptions and Methods of Analysis

Methods of analysis and assumptions are similar to those described above in Sections 4.1.2 and 4.2.3. The following additional indicators and assumptions apply to Greater Sage-Grouse:

Indicators of impacts on Greater Sage-Grouse and the measurements used to describe the impacts (where available or appropriate) are described below:

Direct Habitat Loss
Acres of habitat lost. Direct habitat loss results when habitat is destroyed or converted to a form that is unsuitable for the impacted species. Direct habitat loss can be a short-term or long-term impact.

Habitat Fragmentation
Habitat fragmentation occurs when contiguous habitat is broken into smaller blocks by surface-disturbing activities. Habitat fragmentation could lead to the following:

- Likelihood of reduced habitat quality and interference with movement patterns, leading to a decreased ability to breed or overwinter successfully to a degree that would lead, in turn, to substantial population declines
- Likelihood that individual habitat blocks would be reduced
- Likelihood of increased percentage of edge habitat on smaller blocks when compared to larger blocks

Disruption to Species
Direct mortality of species, including predation, collisions with structures (fences, towers, vehicles), and disease; interference with movement patterns due to fragmented landscapes; short- or long-term displacement and physiological or behavioral influences (avoidance of otherwise functional habitats).

Habitat Degradation
Weed infestation and understory and overstory reductions indicators (reductions in herbaceous ground cover, lack of residual cover, change in understory plant composition)

Miles disturbed (for limits on travel management, recreation, unleased areas)

Miles/acres disturbed. (It is assumed that habitat next to roads that are impacted by dust and dust suppression activities would have some lower level of understory next to the impacted habitat.)

Habitat Restoration or Improvement
The likelihood of improving habitat quality (e.g., increased species diversity, increased habitat connectivity, and decreased weeds).

Habitat Protection
Acres protected through stipulations, withdrawals, closures, and special designations (e.g., ACECs). Also, the likelihood of reduced or prohibited surface disturbance.

In addition to the assumptions listed under Section 4.1.2, the following would apply specifically to Greater Sage-Grouse:

- In general, Greater Sage-Grouse are highly sensitive to habitat fragmentation, development, or changes in habitat conditions. This is because Greater Sage-Grouse inhabit and require large, intact sagebrush ecosystems, and are especially sensitive to disturbance and human presence.

Conservation Planning
The goals for biological resources management in the PRMP are summarized in **Table 2-1** of this BA. Additionally, **Table 2-1** includes the objectives, actions, and conservation measures proposed to achieve the goals. The PRMP is primarily a landscape-level, programmatic-level document. The stipulations, conservation measures, and BMPs described below for Greater Sage-Grouse are not comprehensive. New conservation measures may be developed at the project level.

Objectives
One objective directly related to Greater Sage-Grouse is included in the PRMP (**Table 2-1**):

- Advance the conservation of Gunnison and Greater Sage-Grouse and their habitat in accordance with current national, state, and local working group recommendations and policy as well as the most current scientific literature and research.

Actions and Surface Disturbance Restrictions
Twenty-six management actions and stipulations directly related to Greater Sage-Grouse are included in the proposed plan (**Table 2-1**):

- Consistent with current guidance for sagebrush-dependent species, improve areas of poor quality nesting habitat by implementing the following actions, including but not limited to:
    - In areas where species diversity is low seed area with grasses and forbs, with an emphasis on forbs if brood-rearing occurs in the area, accompanied by light disking and interseeding, or drill seeding.
    - Where sage is decadent and does not meet habitat objectives, conduct thinning by roller-chopping, light disking, Dixie Harrow, Lawson Aerator or other methods.

    - Conduct vegetation treatments to retain residual cover through fall and winter into nesting season.

- When reseeding roads, primitive roads and trails, use appropriate seed mixes (appropriate for Sage-Grouse ecological conditions) and consider the use of transplanted sagebrush.
- Reduce routes through currently suitable or potentially suitable Gunnison and Greater Sage-Grouse habitat by reducing routes through sage brush parks, with an emphasis on routes that bisect sage brush parks.
- Improve brood-rearing habitats by implementing the following action:

    - Restore old ponds or construct new ponds in areas lacking water, while minimizing potential for promoting mosquito breeding habitat at elevations below 8,000 feet.

- Improve lek areas by mechanically treating historic lek areas where sagebrush density has increased.
- To reduce disturbance to Gunnison or Greater Sage-Grouse, close duplicative or redundant routes within Sage-Grouse habitat and within 4 miles of a lek.
- Remove/modify raptor perches, in Gunnison and Greater Sage-Grouse habitat (trees, fences, dry-hole markers, and power poles).
- Monitor measureable objectives and evaluate grazing management to assure that management actions are achieving Sage-Grouse habitat objectives.
- Design any new structural range improvements to conserve, enhance, or restore Sage-Grouse habitat through an improved grazing management system relative to Sage-Grouse objectives. Structural range improvements, in this context, include but are not limited to: cattleguards, fences, enclosures, corrals or other livestock handling structures; pipelines, troughs, storage tanks (including moveable tanks used in livestock water hauling), windmills, ponds/reservoirs, solar panels and spring developments.
- To reduce Sage-Grouse strikes and mortality, remove, modify, or mark fences in high risk areas. When fences are necessary, require a Sage-Grouse-safe design.
- Locate supplements (salt or protein blocks) in a manner designed to conserve, enhance, or restore Sage-Grouse habitat.
- Offer temporary use on a case-by-case basis in allotments where grazing preference has been relinquished, or non-use warrants to rest other allotments that include important Sage-Grouse habitat.

- Apply TL-16 (Occupied Sage-Grouse Winter Habitat) or TL-17 (Sage-Grouse Leks) to vegetation management treatments according to the type of seasonal habitats present in a priority area.
- Monitor after vegetation treatments for success in meeting objectives and monitor and control invasive vegetation after vegetation treatments in Sage-Grouse habitat.
- Apply post-vegetation treatment management and monitoring to ensure long term persistence of seeded native plants. Outline temporary or long-term changes in livestock grazing, wild horse and burro, and travel management, etc., to achieve and maintain vegetation management objectives to benefit Sage-Grouse and their habitats.
- Design vegetation treatments in Sage-Grouse habitats to strategically reduce wildfire threats in the greatest area. This may involve spatially arranging new vegetation treatments with past treatments, vegetation with fire-resistant seral stages, natural barriers, and roads in order to constrain fire spread and growth. This may require vegetation treatments to be implemented in a more linear versus block design.
- Include Sage-Grouse habitat parameters as defined by Connelly et al. (2000), Hagen et al. (2007) or if available, state and federal Sage-Grouse conservation and recovery plans and appropriate local information in habitat restoration objectives. Make maintaining these objectives within priority Sage-Grouse habitat areas a high restoration priority.
- Choose native plant seeds for vegetation treatments based on availability, adaptation (site potential), probability for success, and the vegetation management objectives for the area covered by the treatment. Where probability of success or native seed availability is low, use species that meet soil stability and hydrologic function objectives as well as vegetation and Sage-Grouse habitat objectives.
- Manage the following areas to benefit Sage-Grouse habitat:
    - Wildlife Emphasis Areas:
        - Glade Park and
        - Sunnyside.
    - ACECs:
        - Roan and Carr Creek
- Identify the following as ROW exclusion areas:
    - Within a 0.6-mile radius of Sage-Grouse leks.
- Identify the following as ROW avoidance areas:

  - Sage-Grouse occupied habitat and
  - Within a 4-mile radius of Sage-Grouse leks.

- **No Leasing:** *Sage-Grouse.* Close all occupied Gunnison Sage-Grouse habitat (currently 10,600 acres) and greater Sage Grouse habitat within one mile of an active lek to fluid mineral leasing and geophysical exploration.
- **No Leasing:** *Split-estate.* Manage 12,200 acres of Private and State surface/federal fluid mineral estate in all occupied Gunnison Sage-Grouse habitat and greater Sage Grouse habitat within one mile of an active lek as closed to fluid mineral leasing and geophysical exploration.
- **STIPULATION** TL-16: *Occupied Sage-Grouse Winter Habitat.* Prohibit surface occupancy and surface-disturbing activities in occupied Sage-Grouse winter habitat from December 16 to March 15.
- **STIPULATION** NSO-25: *Sage-Grouse Leks, Nesting, and Early Brood-rearing Habitat.* Prohibit surface occupancy and surface-disturbing activities within 4 miles of an active lek or within Sage-Grouse nesting and early brood-rearing habitat.
- **STIPULATION** TL-17: Sage-Grouse Leks. Prohibit surface occupancy and surface-disturbing activities within 4 miles of Sage-Grouse leks from March 1 to June 30.

Additional management actions indirectly related to the protection of the Greater Sage-Grouse are described in **Table 2-1** and incorporated by reference.

Colorado Standards for Public Land Health

The Colorado Standards for Public Land Health describe conditions needed to sustain public land health. They relate to all uses of the public lands. Standards are applied on a landscape scale and relate to the potential of the landscape (Appendix E of the PRMP). Of the five standards listed, standards 1, 3, and 4 would directly apply to the conservation of Greater Sage-Grouse. Specifically, standard 1 applies to the desire for upland soil moisture conditions to sustain optimal plant growth and vigor thereby enhancing habitat conditions. Standard 3 promotes the health of native plants and animals at the community and population levels. Standard 4 establishes BLM standards for protecting and enhancing special status, threatened, and endangered federal and state species and other plants and animals.

BMPs for Management Actions

Appendix H of the PRMP includes a number of BMPs and standard operating procedures that would benefit Greater Sage-Grouse by protecting soils, vegetation, and suitable habitat. These BMPs include but are not limited to:

closing selected routes to protect special status species, placing pipelines and other ROWs within road corridors when feasible to minimize disturbance, and minimizing disturbance to soil and native vegetation as much as possible. Additionally, various other practices designed to prevent or limit noxious and invasive weed infestations are also included as BMPs.

Direct and Indirect Effects

There would be no effects on Greater Sage-Grouse from air and climate resources; wild horses; cultural resources; paleontological resources; visual resources; water resources; wild and scenic rivers; lands with wilderness characteristics; forestry; National Trails; national, state, and BLM byways; Native American tribal uses; public health and safety; socioeconomics; and environmental justice. These resource programs are not discussed further.

Effects from Soils Resource Management

The goal of soil resource management in the GJFO RMP is to ensure upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes. Adequate soil infiltration and permeability allows for optimal plant growth and vigor, and minimizes runoff and erosion. As a result, this would support healthy Greater Sage-Grouse habitats.

Effects from Vegetation Management

Under the PRMP, vegetation management and protection would impact Greater Sage-Grouse habitats. Management to improve and protect vegetation conditions throughout the planning area would improve vegetative cover, reduce the likelihood for erosion and sedimentation, and maintain seed banks. Most vegetation treatments would not affect Greater Sage-Grouse, as a timing limitation would be applied to avoid impacts during sensitive periods. Improved vegetative conditions would improve habitat for Greater Sage-Grouse by providing more opportunities for lekking, nesting, brood-rearing, wintering, cover, and foraging over the long term. In the short term, vegetation treatments could remove potential habitat or increase the potential for weed spread. In addition, human disturbance and noise associated with the use of heavy equipment for vegetation removal could temporarily displace Greater Sage-Grouse from foraging, breeding, nesting, and wintering habitats.

Greater Sage-Grouse habitat would be improved and maintained through vegetation treatments, prioritizing winter Sage-Grouse habitat for treatment and restoration, developing restoration plans in non-functioning habitat, reducing pinyon-juniper encroachments, increasing habitat connectivity, and managing for age class diversity. Greater Sage-Grouse would be directly and indirectly affected by these management actions in the short and long term. Actions to reduce pinyon-juniper woodland invasion of upper elevation sagebrush communities would benefit Greater Sage-Grouse that require open sage parks.

Effects from Fish and Wildlife Management

In general, fish and wildlife management would improve and maintain habitat for a variety of species throughout the decision area. Objectives and actions intended to support big game species would likely also benefit to Greater Sage-Grouse. For example, elk winter concentrations areas and severe winter range overlap with PPH and PGH. Prohibiting surface occupancy and surface-disturbing activities from December 1 to May 1 in these areas to protect big game winter range would also benefit Greater Sage-Grouse populations by limiting activities which can result in behavior disturbances.

Effects from Special Status Species

A suite of management actions would be implemented to conserve Greater Sage-Grouse under the PRMP, including habitat improvement, habitat protection, and mineral leasing stipulations and prohibitions. Nesting, brood-rearing, and lek habitat would be improved, and vegetation management actions in sagebrush would aim to conserve, enhance, and restore Greater Sage-Grouse habitats. Raptor perches would be removed or modified in Greater Sage-Grouse habitat to reduce predation, and a Sage-Grouse-safe design would be required for all fences in PPH. In addition, the Roan and Carr Creeks ACEC and the Glade Park and Sunnyside wildlife emphasis areas would be managed for Sage-Grouse habitat. There would be a number of range management actions, such as authorizing new water developments when PPH would benefit and designing new structural range improvements to benefit PPH.

Effects from Wildland Fire Management

Depending on the extent, location, severity, and seral type affected, unplanned ignitions would have adverse impacts on Greater Sage-Grouse by removing or degrading habitat and/or reducing population viability. Large or intense wildfires could damage large expanses of habitat. Indirect effects could result from increased erosion, and increased potential for noxious and invasive weed establishment.

Under the PRMP, the BLM would avoid planned and unplanned fire in low-elevation cheatgrass-infested communities, which would help protect adjacent sagebrush habitats used by Greater Sage-Grouse. Following an unplanned fire, Emergency stabilization and rehabilitation treatments could help to reestablish vegetation and restore habitat for Greater Sage-Grouse. Using a variety of fuel treatments would have short-term effects on Greater Sage-Grouse and habitats through vegetation removal, increased likelihood of erosion and sedimentation, human presence, and the potential for habitat avoidance. In the long term, these activities would reduce the likelihood of uncharacteristically large or intense wildfires that could damage large expanses of habitat or kill or displace wildlife. In addition, the condition of upland vegetation would be improved.

Increased human activity and disturbance associated with wildland fire suppression and prescribed fire in areas occupied by Greater Sage-Grouse could

affect lekking, nesting, brood-rearing, wintering, or foraging behavior. Important habitats could be altered because of the use of heavy equipment, hand tools, and noise associated with intensive human activity. However, there is also a risk of habitat loss in areas where wildland fire suppression is absent or limited due to the increased potential for large and more severe wildfires. This in turn is balanced by the fact that a large fire could require extensive suppression operations, such as extensive staging areas and fire-line construction, which could themselves result in long-term effects on Greater Sage-Grouse and their habitats. Smaller fires that would require less extensive suppression operations would generally avoid these long-term effects.

Effects from Livestock Grazing Management

Potential impacts of herbivory (plant eating) on Greater Sage-Grouse habitat include historic overgrazing of sagebrush communities, resulting in Greater Sage-Grouse habitat changes (Beck and Mitchell 2000). By altering components necessary for Greater Sage-Grouse habitats, livestock grazing can impact the suitability and extent of Greater Sage-Grouse habitats (Wyoming Sage-Grouse Working Group 2003).

Potential impacts of grazing and associated activities on Greater Sage-Grouse include direct impacts of herbivores, such as trampling of nests and eggs, altered Greater Sage-Grouse behavior due to presence of herbivores, and impacts on Greater Sage-Grouse and their behavior from structures associated with grazing management (Beck and Mitchell 2000). Additionally, mortality associated with fence collisions has been documented in lesser prairie-chickens *(Tympanuchus pallidicinctus)* in Oklahoma (Wolfe et al. 2007) and Greater Sage-Grouse in Idaho (Stevens 2011). Stevens et al. (2012) showed that topographic features, proximity to active leks, lek size, and fence design and density can influence collision potential and frequency. Furthermore, fences in areas with higher Greater Sage-Grouse population densities had higher collision rates. Areas where fence densities exceed 1.6 miles per square mile may also pose a risk to Greater Sage-Grouse (Stevens 2011).

In areas that are available for livestock grazing, there could be more impacts on Greater Sage-Grouse than in areas where livestock grazing is excluded. Under the PRMP, 5,200 acres of Sage-Grouse PPH and 8,700 acres of PGH would be open to livestock grazing and 200 acres of PPH and 100 acres of PGH would be closed to livestock grazing.

The PRMP includes a number of management actions to incorporate Greater Sage-Grouse habitat objectives and management considerations into livestock grazing management. Such measures would help to improve vegetation condition of rangeland areas and could reduce the likelihood of nonnative invasive species introduction or spread. In addition, removing, modifying, or marking fences in high risk areas would help to reduce the threat of injury or mortality to Greater Sage-Grouse.

Effects from Recreation and Visitor Services

Areas Open for Casual Use. Impacts from recreational use would include impacts from casual use such as nonmotorized recreation or dispersed camping. Such activities are not subject to site-specific environmental review and vegetation impacts would not be apparent until after damage has occurred. Examples of direct impacts on Greater Sage-Grouse from casual use include habitat loss, fragmentation, and direct mortality from collisions with vehicles. Impacts are more likely to occur in easily accessible areas where visitation would be high, and in areas open to intensive motorized use, as cross-country travel facilitates weed spread as well as increasing habitat fragmentation. In general, the more acres of routes in the area, the greater the likelihood of habitat fragmentation and disturbance to species and habitats as high concentrations of human use typically occur on or immediately adjacent to motorized routes.

Permitted Uses. Activities authorized under SRPs could disrupt Greater Sage-Grouse, but all SRPs would contain standard stipulations appropriate for the type of activity and may include additional stipulations necessary to protect land or resources, including Greater Sage-Grouse.

Effects from Lands and Reality Management

Construction and operation of ROW facilities, such as pipelines, roads, and transmission lines, may result in habitat loss, fragmentation, and degradation. Surface disturbance during construction removes vegetation and important habitat components for Greater Sage-Grouse and, in most cases, renders the habitat unsuitable. ROWs, such as those for roads and industrial facilities, may lead to permanent loss of Greater Sage-Grouse habitat. Other ROWs, such as those for pipelines or buried power lines, may lead to a more short-term loss of habitat if the area were reclaimed after construction. However, following natural succession regimes, sagebrush communities would take 20 to 30 years to return to preconstruction conditions. In addition to removing vegetation, long-term occupancy of structures and facilities leads to direct habitat loss.

ROWs may also lead to habitat fragmentation and degradation. ROW projects can reduce patch size and increase edge habitats. Since Greater Sage-Grouse require large blocks of intact habitat, linear disturbances reduce habitat quality. Surface disturbance can also lead to new weed infestations and spread weeds where infestations already occur. Noxious and invasive weeds are often of lower value to wildlife, and degrade wildlife habitat by reducing optimal cover or food. Sagebrush-steppe communities are among the ecosystems most vulnerable to invasion and degradation by invasive weeds. Not only can invasive species outcompete most native plants when moisture is limited, they can also change site-specific fire ecology and result in the loss of critical shrub communities. The loss and degradation of sagebrush habitat can reduce the carrying capacity of local breeding populations of Greater Sage-Grouse, especially in areas where high quality sagebrush habitat is limited (Braun 1998; Connelly et al. 2000).

As such, there would likely be more impacts on Greater Sage-Grouse and their habitat in areas where ROWs are permitted compared to areas where ROWs are excluded or avoided.

Disruption Impacts. Both the construction and operation phases of ROW projects can lead to disruption impacts. Noise and an increase in human presence during construction may displace Greater Sage-Grouse into lower quality habitat and may disrupt breeding and nesting (Holloran 2005). Although construction impacts are generally short term, many impacts would continue during routine maintenance and operation of the ROWs. Greater Sage-Grouse would likely avoid habitat in the vicinity of infrastructure (Holloran et al. 2010), resulting in indirect habitat loss. In addition, noise and an increase in traffic during ROW operation and maintenance would disturb and likely displace Greater Sage-Grouse (Lyon and Anderson 2003; Holloran 2005). Avoidance of habitat would be most prevalent during levels of high human activity, such as ROW construction. Greater Sage-Grouse may avoid otherwise suitable habitat as the density of roads and infrastructure increases (Holloran 2005).

Greater Sage-Grouse have evolved in habitat devoid of tall structures. ROW projects involving tall structures, such as power lines (distribution and transmission lines), communication towers, and meteorological towers, may lead to avoidance of suitable habitat (Pitman et al. 2005; Pruett et al. 2009; Wisdom et al. 2011). Although peer-reviewed science that demonstrated a clear avoidance of tall structures is limited for Greater Sage-Grouse, studies conducted on species that have similar life history (i.e., the lesser and greater prairie-chickens) have shown that use of habitat is reduced when these habitats are located near tall structures (Pitman et al. 2005; Pruett et al. 2009).

Avian predators, particularly raptors and corvids (i.e., crows, ravens, and magpies), are attracted to overhead utility lines because they provide perches for various activities, including hunting (Avian Power Line Interaction Committee 2006). Increased predation and harassment of Greater Sage-Grouse may occur from new ROW projects involving power lines or other tall structures (Connelly et al. 2004). However, the PRMP includes management to remove or modify raptor perches, thereby reducing this threat. In addition, road ROWs may increase mammalian predator densities.

Construction and operation of ROW facilities may also lead to direct mortality of Greater Sage-Grouse. The potential for Greater Sage-Grouse mortality from project construction would be low and likely limited to nesting hens or young chicks that have limited mobility. Direct mortality may occur when Greater Sage-Grouse collide with turbines, power lines, or meteorological towers or their supporting infrastructure, such as guy wires (Connelly et al. 2004; Beck et al. 2006). In addition, an increase of traffic on roads from ROW maintenance and operations can lead to direct mortality through vehicle/Greater Sage-Grouse collisions.

Habitat Protection. ROW exclusion or avoidance areas would reduce or eliminate the above-described impacts on Greater Sage-Grouse and their habitat by not allowing ROWs in PGH or PPH. Under the PRMP, all areas within a 0.6-mile radius of leks would be ROW exclusion areas, covering 600 acres of PPH. Further, Sage-Grouse occupied habitat and areas within 4 miles of leks would be ROW avoidance areas, covering 5,000 acres of PPH and 8,700 acres of PGH. There would be no PPH within ROW corridors.

Effects from Energy and Mineral Management

While the long-term impacts of fluid minerals development are unclear (Connelly et al. 2000), recent studies have shown effects from these activities on Greater Sage-Grouse. Impacts include reduced nest initiation rates (Lyon and Anderson 2003), avoidance of developed areas and increases in movement (Lyon and Anderson 2003; Holloran 2005; Crompton 2005; Doherty et al. 2008), reduced attendance of males at lek sites (Holloran 2005; Walker et al. 2007; Crompton 2005), and reduced survivorship (Crompton 2005). Impacts occur in lekking, nesting, brood rearing, and winter habitat (Crompton 2005; Doherty et al. 2008), and negative effects have been shown to occur from 0.5 mile to 4 miles away from oil and gas development (Walker et al. 2007). It is possible that Sage-Grouse may repopulate developed areas after oil and gas operation ends, but long-term studies have not yet been conducted.

Within the planning area, leased and unleased fluid minerals overlap with PPH and PGH, see **Table 4-2**, Acres of Fluid Minerals in Greater Sage-Grouse Habitat by PPH and PGH.

Table 4-2
Acres of Fluid Minerals In Greater Sage-Grouse Habitat by PPH and PGH

Indicator	PPH	PGH
Total Acres	49,300 Acres	29,300 Acres
Acres of BLM Surface Ownership	5,520 Acres	8,900 Acres
% BLM Surface Ownership	11.2%	30.4%
Acres of Federal Minerals	9,600 Acres	13,400 Acres
% Federal Minerals	19.5%	45.7%
Acres of Federal Mineral Estate Leased	4,100 Acres	11,000 Acres
% of Habitat Currently Leased	8.3%	37.5%

As shown in **Table 4-2**, the majority of Greater Sage-Grouse habitat within the planning area occurs on non-BLM administered lands. Federal mineral estate covers 19.5 percent of PPH and 45.7% of PGH. 65.7% of all overlapping federal mineral estate has been leased. Because stipulations in the PRMP can only apply

to new leases, COAs would be more effective at limiting potential impacts associated with fluid mineral developments in these areas.

For the remainder of unleased federal mineral estate in PPH and PGH, stipulations and mineral leasing restrictions for Sage-Grouse include closure of all occupied Greater Sage-Grouse habitat to fluid mineral leasing; TL in occupied winter habitat; NSO for leks, nesting, and early brood-rearing habitat (with a four-mile buffer); CSU for nesting and early brood-rearing habitat (with a four-mile buffer); and TL within four miles of leks. In addition, Sage-Grouse preliminary priority habitat would not be acceptable for coal leasing under the PRMP. With implementation of the stipulations and COAs as described above, adverse effects to the Greater Sage-Grouse are not anticipated.

Effects from Travel Management

In general, the more acres of routes that are designated in the area, the greater the likelihood of habitat fragmentation and disturbance to Sage-Grouse and habitats as high concentrations of human use typically occur on or next to motorized routes. Areas designated as open have no restrictions on cross-country travel and therefore have the highest potential for increased route density and associated disturbance. Managing on-site recreation and motorized activity, limiting travel to designated routes, and closing travel routes could prevent or reduce impacts. For example, seasonal closure of routes would prevent impacts on species during sensitive or critical times of the year, such as during winter or birthing. Impacts are more likely to occur in easily accessible areas where visitation would be highest.

Under the PRMP, the BLM would reduce impacts on Greater Sage-Grouse by limiting key areas to motorized and mechanized vehicles. Specifically, 5,600 acres of PPH and 8,900 acres of PGH would be limited for motorized and mechanized vehicles. In addition, management actions to reduce routes in sage brush parks and close duplicative or redundant routes in Sage-Grouse habitat and within 4 miles of a lek would reduce the potential for impacts from vehicles and human presence.

Effects from Wilderness Study Areas

Under the PRMP, the BLM would continue to manage four existing WSAs within the planning area: Demaree Canyon (22,700 acres); Little Book Cliffs (29,300 acres); The Palisade (26,700 acres); and Sewemup Mesa (17,800 acres). These areas would be closed to motorized and mechanized travel and fluid mineral leasing and geophysical exploration. Further, surface occupancy and surface-disturbing activities would be prohibited. Given the reduced disturbance and human presence in these areas, continued management of the four WSAs within the planning area would benefit any Greater Sage-Grouse which occur within or adjacent to these areas.

Effects from Areas of Critical Environmental Concern Management
The BLM would designate 13 ACECs in the GJFO planning area under the PRMP, encompassing 123,400 acres. Of these, the Roan and Carr Creeks ACEC are valued for Greater Sage-Grouse (among other resources) which occur within the proposed designation boundaries. This designated area would be limited to designated routes, managed as a ROW avoidance area, and classified as unacceptable for coal leasing. In addition, an NSO stipulation would be applied to protect Sage-Grouse leks, nesting, and early brood-rearing habitat. As such, Greater Sage-Grouse would be protected from surface disturbance and associated impacts within these areas.

Cumulative Effects
Cumulative effects include those of future state, tribal, local, or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the proposed action are not considered in cumulative analysis because they will be subject to separate consultation, in accordance with Section 7 of the ESA. Cumulative effects address the impact of implementing the RMP in combination with other future non-federal actions outside the scope of this RMP, either in the planning area or next to it.

The CIAA for Greater Sage-Grouse includes the Western Association of Fish and Wildlife Agencies Management Zone II and VII, which encompasses the entire population, and surrounding populations in Wyoming and Utah.

The majority of the planning area occurs within Mesa County, which has experienced significant population growth since 1987, and population forecasts expect the growth trend will continue (Colorado Division of Local Government, State Demography Office 2013). As such, continued use and development within the planning area is expected to continue. Past, present, and reasonably foreseeable future actions and conditions on non-federal lands in the CIAA that have affected and will likely continue to affect Greater Sage-Grouse are as follows:

- Mineral exploration and development
- Agricultural development
- ROW and infrastructure development
- Livestock grazing
- Recreation
- Road construction
- Weed invasion and spread
- Wildland fires
- Drought
- Farming

In general, resource use activities have cumulatively caused habitat removal, fragmentation, soil compaction, erosion, increased human presence, and weed spread as described above.

Many natural influences create conditions that cause vegetation changes. For example, wildland fire removes vegetation, which makes affected areas more susceptible to weed invasion and soil erosion. Droughts reduce vegetation health, leaving it prone to insect infestation or disease. Climate change in the CIAA could increase or decrease temperatures and precipitation. This would affect soil conditions, vegetation distribution, water flows, water quality, and water temperature (Ficklin et al. 2010; Lenihan et al. 2003; McKenney et al. 2007; Hamann and Wang 2006). Such changes would alter the conditions to which vegetation communities are adapted, potentially creating conditions that favor certain species or communities, weeds, or pests (Hellmann et al. 2007) and potentially creating unsuitable conditions for Greater Sage-Grouse.

CHAPTER 5
EFFECTS DETERMINATION

5.1 COLORADO HOOKLESS CACTUS

Implementing the RMP **may affect, is likely to adversely affect** the Colorado hookless cactus.

5.1.1 Rationale

- In 2012 the BLM prepared a BA (BLM 2012a) and an amendment containing revised conservation measures (BLM 2012b). The BA assessed the effects of the BLM's livestock grazing program on Colorado hookless cactus, clay-loving wild buckwheat, and DeBeque phacelia in the Uncompahgre, Grand Junction, and Colorado River Valley Field Offices. The BA determined that livestock grazing permitted by the BLM is likely to adversely affect these three listed species. The USFWS issued a programmatic BO for the consultation on November 15, 2012 (USFWS 2012b). This BA tiers to the 2012 BO for livestock grazing. Grazing activities within the GJFO would contribute to the adverse effects determination for the Colorado hookless cactus.

- Under the Proposed RMP, 56.4 miles of routes open to public use (including 11.2 miles of county-maintained roads) would be located within 200 meters of known Colorado hookless cactus occurrences. An addition, 9.8 miles of routes within 200 meters would be restricted to administrative and permitted use only. There would also be 47.9 miles of existing routes within 200 meters of known occurrences proposed for closure and rehabilitation. Within 20 meters of known occurrences, 4.1 miles of routes would be open to public use (including 0.3 miles of county-maintained roads) and 1.1 miles of routes would be restricted to administrative and permitted use only. There would be 5.8 miles of routes within 20 meters of known occurrences proposed for closure and rehabilitation.

Impacts, in the form of trampling, could also occur from cross-country foot and horse travel. Therefore, adverse effects associated with travel and transportation are anticipated.

- Numerous actions, stipulations, BMPs, and other measures detailed in Section 4.2.1would be implemented under the PRMP to protect Colorado hookless cactus and its habitat throughout the planning area. However, adverse effects from livestock grazing and travel management are anticipated.

5.2 DEBEQUE PHACELIA

Implementing the RMP **may affect, is likely to adversely affect** the DeBeque phacelia. Additionally, implementing the RMP **may affect, is likely to adversely affect** designated critical habitat for the DeBeque phacelia.

5.2.1 Rationale

- In 2012 the BLM prepared a BA (BLM 2012a) and an amendment containing revised conservation measures (BLM 2012b). The BA assessed the effects of the BLM's livestock grazing program on Colorado hookless cactus, clay-loving wild buckwheat, and DeBeque phacelia in the Uncompahgre, Grand Junction, and Colorado River Valley Field Offices. This BA determined that livestock grazing permitted by the BLM is likely to adversely affect these three listed species. The USFWS issued a programmatic BO for this consultation on November 15, 2012 (USFWS 2012b). This BA tiers to the 2012 BO for livestock grazing. Grazing activities within the GJFO would contribute to the adverse effects determination for the DeBeque phacelia.

- Numerous actions, stipulations, BMPs, and other measures detailed in Section 4.2.1 would be implemented under the PRMP to protect the DeBeque phacelia and its habitat throughout the planning area. However, adverse effects from livestock grazing and travel management are still anticipated.

5.3 PARACHUTE PENSTEMON

Implementing the RMP **may affect, is not likely to adversely affect** the Parachute penstemon. Additionally, implementing the RMP **may affect, is not likely to adversely affect** designated critical habitat for the Parachute penstemon.

5.3.1 Rationale

- The majority of Parachute penstemon occurrences within the planning area are found on private lands where the BLM has limited ability to implement protective measures. However, the cooperative

work between Oxy Oil Shale, the Colorado Natural Areas Program (CNAP), and USFWS in the designation of a Natural Area for the Logan Wash Mine demonstrates Oxy Oil Shale's commitment to the protection of Parachute penstemon on their private land.

- Drainage clearing along the Logan Wash Mine area (as required by the Logan Wash Mine stormwater management plan) is the one of the most significant threats to individuals within the planning area.

- The Logan Wash Mine area would be identified as a core conservation population, and would be managed to maintain the population. Management tools include but are not limited to the use of mats, weed treatments, route closures, and fencing/barriers. Additionally, rehabilitation and closure of roads associated with authorized uses would occur when no longer needed.

5.4 UTE LADIES'-TRESSES

Implementing the RMP **may affect, is not likely to adversely affect** the Ute Ladies'-tresses and its habitat.

5.4.1 Rationale

- No known occurrences have been documented within the planning area.

- There is minimal potential habitat with the planning area. Riparian areas surround DeBeque and Plateau Creek is considered suitable. NSO-2 (streams/springs possessing lotic riparian characteristics) would help protect this habitat by prohibiting surface occupancy and use and surface-disturbing activities within a minimum distance of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage). Where the riparian corridor width is greater than 100 meters (328 feet) from bank-full, surface occupancy and use and surface-disturbing activities would be prohibited within the riparian zone.

5.5 BONYTAIL, HUMPBACK CHUB, RAZORBACK SUCKER, COLORADO PIKEMINNOW

Implementing the PRMP **may affect, is likely to adversely affect** the four endangered Colorado River fishes. Additionally, the PRMP **may affect, is likely to adversely affect** the four endangered Colorado River fishes critical habitat.

5.5.1 Rationale

- Water depletion activities (e.g. construction of water impoundments, water diversions, and water use associated with fluid mineral development) are likely to adversely affect the four big

river fish species and their critical habitat. These effects from water depletions would be similar to those effects described under the 2008 fluid minerals, and the 2009 non-fluid mineral water depletions BOs. The effects under the RMP would not exceed those consulted on in the programmatic BOs (USFWS 2008; 2009a).

- The indirect effects of small, site-specific increases in sediment on the four endangered Colorado fish species would be negligible and well within the background levels carried by the Colorado and Gunnison Rivers. Any increased sediment loading into the river from BLM management would be largely undetectable.
- Elevated selenium concentrations can affect fish reproduction and recruitment. Selenium leaching is a naturally occurring process within the planning area, and is expected to continue. Stipulations and BMPs in the PRMP including those that affect stormwater, steep slopes, and proximity to drainages are expected to reduce the likelihood of water quality impacts from the implementation of the RMP to the point where these impacts would be discountable.
- While such programs as travel, ROWs, and wildland fire suppression have the potential for accidental spills and leaks of hazardous substances associated with their application on BLM lands, the BLM does not authorize these accidents. The RMP and this BA contain conservation measures to reduce the risk of these occurrences near critical habitats for these fish. In the rare and unlikely event of a spill, the BLM would initiate emergency consultation with the USFWS.
- Climate change is an unknown factor regarding long-term persistence of some cutthroat trout populations. However, given the global scale over which effects are occurring, it is impossible to detect effects from actions authorized in this plan. Managing stream and riparian habitats to their full potential will help to offset impacts associated with global climate change.

5.6 GREENBACK CUTTHROAT TROUT

Implementing the PRMP **may affect, is not likely to adversely affect** the greenback cutthroat trout.

5.6.1 Rationale

- Increased sediment and turbidity have the potential to impact green lineage cutthroat trout; however stipulations, BMPs, and the designation of the Roan and Carr Creeks ACEC would limit surface disturbing activities near occupied waterways.

- While such programs as travel, ROWs, and wildland fire suppression have the potential for accidental spills and leaks of hazardous substances associated with their application on BLM lands, the BLM does not authorize these accidents. The RMP and this BA contain conservation measures to reduce the risk of these occurrences near critical habitats for these fish. In the rare and unlikely event of a spill, the BLM would initiate emergency consultation with the USFWS.

- Climate change is an unknown factor regarding long-term persistence of some cutthroat trout populations. However, given the global scale over which effects are occurring, it is impossible to detect effects from actions authorized in this plan. Managing stream and riparian habitats to their full potential will help to offset impacts associated with global climate change.

- Stipulations and BMPs to protect perennial waterways would also protect green lineage cutthroat trout habitat

5.7 MEXICAN SPOTTED OWL

Based on the effects analysis and the management actions, stipulations, and conservation measures described above, implementation of the RMP **may affect, is not likely to adversely affect** the threatened Mexican spotted owl. The PRMP would have no effect on critical habitat because none has been designated in the action area.

5.7.1 Rationale

- No individuals are known to occur in the RMP planning area.
- The RMP and this BA contain conservation measures and management actions to reduce the risk of impacting Mexican spotted owl habitat.

5.8 CANADA LYNX

Based on the effects analysis and the management actions, stipulations, and conservation measures described above, implementation of the RMP **may affect, is not likely to adversely affect** the threatened Canada lynx. Additionally, implementing the RMP **may affect, is not likely to adversely affect** proposed critical habitat for the Canada lynx.

5.8.1 Rationale

- Limited suitable habitat occurs within the planning area.
- The RMP and this BA contain conservation measures and management actions to maintain and improve BLM-managed portions of the Lynx Analysis Unit.

5.9 WESTERN YELLOW-BILLED CUCKOO

Based on the effects analysis and the management actions, stipulations, and conservation measures described above, implementation of the RMP **may affect, is not likely to adversely affect** the threatened western yellow-billed cuckoo. Additionally, the PRMP **may affect, is not likely to adversely affect** the proposed western yellow-billed cuckoo critical habitat.

5.9.1 Rationale

- The RMP and this BA contain conservation measures, BMPs, and management actions to reduce the risk of impacting yellow-billed cuckoo and associated riparian habitat including limitations on development within riparian areas.

5.10 GUNNISON SAGE-GROUSE

5.10.1 Determination for Gunnison Sage-Grouse

Based on the effects analysis and the management actions and conservation measures described above, implementation of the RMP is not likely to jeopardize the continued existence of the Gunnison Sage-Grouse. Implementation of the RMP **may affect, is likely to adversely affect** the Gunnison Sage-Grouse.

5.10.2 Rationale

- Livestock grazing may potentially result in adverse impacts to the Gunnison Sage-Grouse through trampling of nests. This is thought to be rare but the impact is not discountable.
- Impacts would not be sufficient to preclude the survival or recovery of the population as a whole. If the proposed species is listed, the BLM would request that the conference opinion be included in the BO.
- The RMP and this BA contain conservation measures, BMPs, and management actions to reduce the risk of impacting Gunnison Sage-Grouse.
- Surface disturbance restrictions would be implemented under the RMP to prohibit surface-disturbing activities, with the goal of protecting sensitive Gunnison Sage-Grouse habitat from human-caused disturbances. These include but are not limited to NSO stipulations surrounding active leks; TLs which would prohibit surface occupancy and surface disturbing activities in or surrounding occupied winter habitat, leks, nesting, and early brood-rearing habitat; and ROW exclusion and avoidance designations near leks and occupied habitat. No fluid mineral development potential occurs within or near established Gunnison Sage-Grouse

populations in the GJFO planning area, and no existing fluid mineral leases overlap proposed critical habitat. All occupied Gunnison Sage-Grouse habitat (currently 10,600 acres) would be closed to leasing.

5.10.3 Determination for Gunnison Sage-Grouse Proposed Critical Habitat

Based on the effects analysis and the management actions and conservation measures described above, implementation of the RMP **may affect, is not likely to adversely affect** the Gunnison Sage-Grouse proposed critical habitat.

5.10.4 Rationale

- Determination for proposed critical habitat included the consideration of the potential for 'harm' to Gunnison Sage-Grouse. The ESA handbook defines harm as an act which actually kills or injures wildlife, to include significant habitat modification or degradation when it actually kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding or sheltering (ESA handbook 4-46). At no point will proper livestock grazing in the project area reach a level to significantly impair breeding, feeding, or sheltering behavior of Gunnison Sage-Grouse. Grazing authorizations are required to incorporate sage-grouse habitat objectives into all allotments in occupied critical habitat. Allotments in occupied habitat are prioritized for land health assessments and required to have sage-grouse habitat objectives incorporated in to LHAs. Proper livestock grazing management does not considerably reduce the capability of designated or proposed critical habitat to satisfy requirements essential to both the survival and recovery of a listed species, and does not lead to adverse effects on critical habitat. This is evident in the Gunnison Basin where almost all habitats in the basin are grazed by livestock. Gunnison Sage-Grouse in the Gunnison Basin have experienced steady population trends over the last decade, even during drought. Improper livestock grazing management may have adverse impacts on critical habitat; however this plan does not analyze an improper livestock grazing alternative.
- The RMP and this BA contain conservation measures, BMPs, and management actions to reduce the risk of impacting Gunnison Sage-Grouse.
- Surface disturbance restrictions would be implemented under the RMP to prohibit surface-disturbing activities, with the goal of protecting sensitive Gunnison Sage-Grouse habitat from human-caused disturbances. These include but are not limited to NSO stipulations surrounding active leks; and ROW exclusion and

avoidance designations near leks and occupied habitat. No fluid mineral development potential occurs within or near established Gunnison Sage-Grouse populations in the GJFO planning area, and no existing fluid mineral leases overlap proposed critical habitat. All occupied Gunnison Sage-Grouse habitat (currently 10,600 acres) would be closed to leasing.

5.11 GREATER SAGE-GROUSE

Based on the effects analysis and the management actions and conservation measures described above, implementation of the RMP is not likely to jeopardize the continued existence of the Greater Sage-Grouse. Implementation of the RMP **may affect, is not likely to adversely affect** the Greater Sage-Grouse.

5.11.1 Rationale

- The GJFO contains primarily wintering habitat for the species on BLM lands. The potential for trampling of nests and/or eggs by permitted livestock is unlikely and therefore discountable.
- Impacts would not be sufficient to preclude the survival or recovery of the population as a whole. If the proposed species is listed, the BLM would request that the conference opinion be include in the BO.
- The RMP and this BA contain conservation measures, BMPs, and management actions to reduce the risk of impacting the Greater Sage-Grouse.
- Surface disturbance restrictions would be implemented under the RMP to prohibit surface-disturbing activities, with the goal of protecting sensitive Greater Sage-Grouse habitat from human-caused disturbances. These include but are not limited to NSO stipulations surrounding active leks; TLs which would prohibit surface occupancy and surface disturbing activities in or surrounding occupied winter habitat, leks, nesting, and early brood-rearing habitat; and ROW exclusion and avoidance designations near leks and occupied habitat.
- Impacts on Greater Sage-Grouse and its habitat would be minimized to the extent practical and feasible through compliance with the BLM Manual 6840, restrictions, stipulations, closures to mineral exploration and development, designation of ACECs, COAs, and by concentrating development in previously disturbed areas. Habitat conditions would be improved through vegetation treatments, weed prevention and control, and grazing management.

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SECTION 6
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Appendix A

Rangeland Heath Conditions in Gunnison Sage-Grouse Critical Habitat

Existing Rangeland Health Conditions By Proposed and Unoccupied Gunnison Sage-Grouse Critical Habitat for Individual Grazing Allotments

Allotment Name	Total Acres	Total Federal Acres	Acres of Occupied Habitat Meeting Standards	Acres of Unoccupied Habitat Meeting Standards	Acres of Occupied Habitat Meeting Standards with Problems	Acres of Unoccupied Habitat Meeting Standards with Problems	Acres of Occupied Habitat not Meeting Standards	Acres of Unoccupied Habitat not Meeting Standards
28 Hole	663	663	139	134	324	66	0	0
Battleship	3,662	1,090	0	394	0	283	0	344
Beezer	1,138	1,126	0	1,126	0	0	0	0
Buckhorn[1]	2,438	2,438	0	253	0	0	0	0
Carns Point	87	50	0	50	0	0	0	0
Clarks Bench	3,070	2,467	0	130	0	0	0	0
Coates Creek	630	378	0	165	0	213	0	0
Cook Canyon	238	126	0	126	0	0	0	0
Dierich Ranch	2,733	1,388	95	1,292	0	0	0	0
Duval	658	658	0	658	0	0	0	0
Duval Bottom	1,173	1,173	0	974	0	0	0	199
East Tom's Canyon	3,892	3,681	0	3,357	0	59	0	265
Fessler	1,054	888	0	864	0	0	0	24
Files	4,076	2,679	0	2,345	0	0	0	333
Fish Canyon	3,683	3,659	283	3,374	0	0	0	0
Fish Park[2]			1,113	756	0	0	257	69
Flat Rock	2,160	705	0	701	0	0	0	0
Hall	91	73	0	73	0	0	0	0
Haystack[2]			1,103	145	0	0	0	0
Hill Creek Flats	6,067	5,470	2,293	2,886	0	0	0	0
King-Rogers	15,240	895	0	210	0	0	0	0
Kings Gap	963	453	0	439	0	0	0	0

Existing Rangeland Health Conditions By Proposed and Unoccupied Gunnison Sage-Grouse Critical Habitat for Individual Grazing Allotments

Allotment Name	Total Acres	Total Federal Acres	Acres of Occupied Habitat Meeting Standards	Acres of Unoccupied Habitat Meeting Standards	Acres of Occupied Habitat Meeting Standards with Problems	Acres of Unoccupied Habitat Meeting Standards with Problems	Acres of Occupied Habitat not Meeting Standards	Acres of Unoccupied Habitat not Meeting Standards
Leslie Bays	6,105	961	3	600	0	303	0	0
Little Dolores Canyon[2]			0	1,269	0	0	0	374
Little Dolores River		1,638	131	1,508	0	0	0	0
Livestock Trail	346	346	0	346	0	0	0	0
Longshore Above Rims[2]			12	33	442	96	0	0
Longshore Below Rims[2]			41	1,345	0	0	0	0
Mabie	794	65	0	64	0	0	0	0
Malone	480	86	0	79	0	3	0	0
McKenzie[2]			29	379	0	0	0	0
Meinhart	3,839	2,144	15	1,580	251	51	0	104
Moore	1,367	336	0	13	0	210	0	0
Mountain Island	43,541	35,046	1	588	0	0	0	0
Notch Springs	3,704	3,467	0	71	0	0	0	0
Payne Wash	3,525	2,408	0	2,096	0	0	0	0
Reservation	3,085	2,944	0	477	1,610	526	8	320
Sieber Canyon[2]			0	1,025	0	0	0	201
Skinner	3,716	1,498	0	1,051	0	0	0	0
Snyder Flats	5,322	3,223	0	2,358	0	0	0	0
South of the	2,026	1,329	0	1,104	0	216	0	0

Existing Rangeland Health Conditions By Proposed and Unoccupied Gunnison Sage-Grouse Critical Habitat for Individual Grazing Allotments

Allotment Name	Total Acres	Total Federal Acres	Acres of Occupied Habitat Meeting Standards	Acres of Unoccupied Habitat Meeting Standards	Acres of Occupied Habitat Meeting Standards with Problems	Acres of Unoccupied Habitat Meeting Standards with Problems	Acres of Occupied Habitat not Meeting Standards	Acres of Unoccupied Habitat not Meeting Standards
Road								
Spring Creek	5,779	5,779	2,013	3,225	0	60	0	67
Thompson	6,420	5,282	0	173	0	0	0	0
Timber Ridge	1,418	1,391	0	1,391	0	0	0	0
Unalloted Mesa Top	991	991	0	991	0	0	0	0
Van Loan Individual	650	347	0	337	0	0	0	0
West Tom's Canyon	3,487	3,481	0	3,013	0	468	0	0
Wiretrap	510	510	0	510	0	0	0	0
Woodring	2123	1,110	0	19	0	0	0	0

Source: BLM 2002e; BLM 2007b; US Forest Service and BLM 1995

[1]Allotment is within the GJFO planning area but is managed and covered under the BLM, Moab Field Office RMP regarding grazing.

[9]Mountain Island allotment is a consolidation of Brush Hole, Fish Park, Haystack, Little Dolores Canyon, Longshore Above Rims, Longshore Below Rims, Lost Horse, McKenzie, and Sieber Canyon allotments. Fish Park is part of Interdistrict Agreement with Moab Field office

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APPENDIX B
STIPULATIONS APPLICABLE TO FLUID MINERAL LEASING AND OTHER SURFACE-DISTURBING ACTIVITIES

This appendix lists by alternative the stipulations for fluid mineral leasing (e.g., oil, gas, and geothermal) referred to throughout this Proposed RMP/Final EIS. These stipulations would also apply, where appropriate, to all surface-disturbing activities (and occupancy) associated with land use authorizations, permits, and leases issued on BLM lands. The stipulations would not apply to activities and uses where they are contrary to laws, regulations, or specific program guidance. The intent of these stipulations is to consistently mitigate impacts by applying the same stipulation to all land use authorizations across the board. It is BLM's intent to incorporate the same level of restrictions, to the extent practicable, on agency proposed projects.

Stipulations also apply to fluid mineral leasing on lands overlying federal mineral estate, which includes federal mineral estate underlying BLM lands, privately owned lands, and state-owned lands. As such, federal mineral estate acres are greater than BLM surface acres. Within the planning area, the BLM administers 1,061,400 acres of surface estate and 169,800 acres of split-estate (i.e., where the surface rights are in private ownership and the rights to development of the mineral resources are publicly held and managed by the federal government (BLM). The BLM will coordinate with the surface owner when applying stipulations on split-estate at the leasing phase. Other land management agencies may have their own surface management decisions for oil and gas development; the BLM would apply these decisions with consent and may add additional stipulations in cooperation with the surface-management agency. Acreages in this appendix reflect federal mineral estate overlain by BLM, private, and state-owned land. Acreages for stipulations are calculated based on current information and may be adjusted in the future through plan maintenance as conditions warrant.

Data from GIS have been used in developing acreage calculations and for generating many of the figures in Appendix A. Calculations are dependent upon the quality and availability of data and most calculations in this RMP are rounded to the nearest one hundred acres. Given the scale of the analysis, the compatibility constraints between datasets, and lack of data for some resources, all calculations are approximate and serve for comparison and analytic purposes only. Likewise, the figures in Appendix A are provided for illustrative purposes and subject to the limitations discussed above. BLM may receive additional GIS data; therefore, acreages may be recalculated and revised at a later date.

Surface-disturbing activities are those that normally result in more than negligible (i.e., immeasurable, not readily noticeable) disturbance to vegetation and soils on public lands and accelerate the natural erosive process.

Surface disturbances could require reclamation and normally involve use and/or occupancy of the surface, causing disturbance to soils and vegetation. They include, but are not limited to: the use of mechanized earth-moving equipment; truck-mounted drilling and geophysical exploration equipment off designated routes; off-road vehicle travel in areas designated as limited or closed to off road vehicle use; construction of facilities such as oil and gas wells and/or pads; major recreation sites; new trail construction; and use of pyrotechnics and explosives. Surface disturbance is not normally caused by casual-use activities. Activities that are not normally considered surface disturbing include, but are not limited to: livestock grazing, cross country hiking, minimum impact filming, vehicular travel on designated routes, and minimum impact emergency response activities such as construction of fire line using hand tools as a tactic for suppression and management of unplanned fire. Even where stipulations prohibit surface disturbing activities, some surface disturbing activities may be allowed under exceptions from stipulations through the process described under **Section B.2.1**. (Example 1: A livestock fence proposed in an area covered by NSO-35 for Wildlife Emphasis Areas may be excepted from the stipulation if it can be shown that the project will have negligible impacts to wildlife through appropriate mitigation; or example 2: A natural gas well pad proposed in an area covered by CSU-8 for Old Growth Forests and Woodlands may be excepted from the stipulation if it can be shown that the project would have negligible impacts on old growth forests and woodlands through appropriate mitigation.)

The BLM has the discretion to modify surface operations to change or add specific mitigation measures when supported by environmental analysis. All mitigation/conservation measures not already required as stipulations would be analyzed in a site-specific NEPA document, and be incorporated, as appropriate, into conditions of approval of the permit, plan of development, and/or other use authorizations.

B.1 DESCRIPTION OF STIPULATIONS

Tables B-1 through **B-4** summarize the stipulations, and **Tables B-5** through **B-8** provide details of the stipulations and protected resources including exceptions, modifications, and waivers by alternative. Three types of stipulations could be applied to fluid mineral leasing or to land use authorizations, except for those authorized under the realty program: 1) NSO or other no surface-disturbing activities; 2) CSU; and 3) TL. ROW authorizations are governed by avoidance and exclusion area restrictions. ROW avoidance areas may have corresponding stipulations, as specifically noted in **Tables B-1** through **B-3** and **Tables B-5** through **B-7**. In these cases, denoted as NSO-X (ROWA), CSU-X (ROWA), or TL-X (ROWA), the surface area covered by the stipulation is considered a ROW avoidance area. Where stipulations are noted as *Partial ROWA*, only a portion of the area covered by the stipulation is a ROW avoidance area. See the glossary for descriptions of ROW avoidance and ROW exclusion.

Lease stipulations and lease notices would be applied to all new leases. On existing leases, the BLM would seek voluntary compliance or would develop Conditions of Approval for Applications for Permit to Drill to achieve resource objectives of the RMP (see BLM's Land Use Planning Handbook H-1601-1 at Appendix C, part H), when determined reasonable and consistent with valid existing rights.[1]

Stipulations identified in Alternative A, current management, were developed in the 1987 GJFO RMP (BLM 1987) and are annotated as "existing" in italics in the "stipulations number" column of **Tables B-1** through **B-4** and **B-5** through **B-8**.

B.1.1 No Surface Occupancy (NSO) or Other Surface-disturbing Activities

Use or occupancy of the land surface for fluid mineral exploration or development and other surface-disturbing activities (as defined above) is prohibited to protect identified resource values. In Alternative A, NSO stipulations apply only to fluid mineral exploration or development. Refer to **Tables B-1** and **B-5**. Acreages are provided in these tables for mapped stipulations.

The NSO/No Surface-disturbing Activities stipulation, a major constraint, includes stipulations that may have been worded as "No Surface Use/Occupancy," "No Surface Disturbance," "Conditional NSO," "ground-disturbing activity," and "Surface Disturbance or Surface Occupancy Restriction (by location)."

[1] See also 43 CFR 1610.5-3(b): "…the Field Manager shall take appropriate measures, subject to valid existing rights, to make operations and activities under existing permits, contracts, cooperative agreements or other instruments for occupancy and use, conform to the approved plan or amendment within a reasonable period of time."

Areas identified as NSO/No Surface-disturbing Activities are open to fluid mineral leasing, but surface-disturbing activities cannot be conducted on the surface of the land unless an exception, waiver, or modification is granted (Section B.2). Access to fluid mineral deposits would require directional drilling from outside the boundaries of the NSO/No Surface-disturbing Activities areas.

An NSO/No Surface-disturbing Activities stipulation cannot be applied to operations conducted under the 1872 Mining Law unless the lands have been withdrawn from mineral entry and the operator has no valid and existing mining claims. A withdrawal is not considered a land use planning decision because it must be approved by the Secretary of Interior. Therefore, unless withdrawn from mineral entry with no pre-existing mining claims, areas identified as NSO/No Surface-disturbing Activities are open to operations conducted under the mining laws, and subject only to TL and CSU stipulations that are consistent with the rights granted under the mining laws. Where only an NSO stipulation exists, and no equivalent CSU or TL stipulations applies to operations conducted under the mining laws, the NSO stipulation would be applied as a CSU stipulation (i.e., the surface-disturbing activity could be shifted more than 200 meters [656 feet] to protect the specified resource or value if consistent with the rights granted under the mining laws).

An NSO/No Surface-disturbing Activities stipulation does not apply to existing facilities and the maintenance of existing facilities, such as, but not limited to, range improvements, oil and gas wells and/or pads, and major recreation sites.

B.1.2 Controlled Surface Use (CSU)

CSU is a category of moderate constraint stipulations that allows some use and occupancy of public land while protecting identified resources or values. A CSU stipulation allows the BLM to require special operational constraints, or the surface-disturbing activity can be shifted more than 200 meters (656 feet) to protect the specified resource or value. Refer to **Tables B-2** and **B-6**. Acreages are provided in these tables for mapped stipulations.

B.1.3 Timing Limitations (TL)

Areas identified for TL, a moderate constraint, are closed to fluid mineral exploration and development, surface-disturbing activities, and intensive human activity during identified time frames. This stipulation does not apply to operation and basic maintenance activities, including associated vehicle travel, unless otherwise specified. Construction, drilling, completions, and other operations considered to be intensive in nature are not allowed. Intensive maintenance and routine or scheduled workovers on wells is not permitted. Administrative activities are allowed at the discretion of the Authorized Officer. Refer to **Tables B-3** and **B-7**. Acreages are provided in these tables for mapped stipulations.

B.1.4 Lease Notice (LN)

A LN provides more-detailed information concerning limitations that already exist in law, lease terms, regulations, or operational orders. An LN also addresses special items that lessees should consider when planning operations but does not impose additional restrictions. Lease Notices apply only to leasable minerals (e.g., oil, gas, geothermal) and not to other types of leases, such as livestock grazing. Refer to **Tables B-4** and **B-8**.

B.1.5 Condition of Approval (COA)

Conditions of Approval are enforceable conditions or provisions (requirements) under which an Application for Permit to Drill is approved.

B.1.6 Mitigation and Monitoring

Stipulations are designed to provide resource-specific protections. Permit holders shall be responsible for the monitoring and reporting deemed necessary to document and maintain mandated protective measures. Also, the BLM retains the right to modify the operations of all surface and other disturbance activities caused by the presence of humans and to require additional specific or specialized mitigation following the submission of a detailed plan of development or other project proposal, a monitoring report, and an environmental analysis of such.

B.2 EXCEPTIONS, MODIFICATIONS, AND WAIVERS

Stipulations could be excepted, modified, or waived by the Authorized Officer. An exception exempts the holder of the land use authorization document from the stipulation on a one-time basis. A modification changes the language or provisions of a surface stipulation, either temporarily or permanently. A waiver permanently exempts the surface stipulation. Any changes to stipulations will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of stipulations, see BLM Manuals 1624 and 3101.)

B.2.1 Exception, Modification, or Waiver Process

An exception, modification, or waiver may be granted at the discretion of the Authorized Officer if any of the standard exception, modification, or waiver criteria (**Section B.2.2**, **B.2.3**, **B.2.4**) are met; or if any of the exception, modification, or waiver criteria specific to the stipulation (**Tables B-5, B-6, B-7**) are met. In order to implement an action that would not normally be allowed because of a stipulation, the proponent must submit a request in writing for an exception, modification, or waiver. The request shall detail which exception, modification, or waiver criteria are met. When requested concurrently with an application, the exception, modification, or waiver is considered as part of the project proposal in RMP and NEPA compliance review. For separate requests, the request is considered as a unique action and is analyzed and documented individually for RMP and NEPA compliance. The Authorized Officer will make the final determination whether to grant an exception, modification, or waiver

to stipulations. When use of heavy equipment is necessary for emergency response activities such as wildland fire suppression, management of unplanned fire, and emergency stabilization, the standard exception would be approved verbally by the BLM authorized officer as delegated (e.g., Incident Commander in coordination with Resource Advisor).

B.2.2 Standard Exception

The standard exception applies to all NSO/No Surface-disturbing Activities, CSUs, and TLs, even though the standard exception is not included in the "exception" portion of **Tables B-5** through **B-7**. In situations where a surface-disturbing activity is excepted, the activity could be subject to additional conditions of approval, reclamation measures, or BMPs. Measures required would be based on the nature and extent of resource values potentially affected by the surface-disturbing activity.

Fluid Minerals

An exception is a one-time exemption for a particular site within the leasehold. Exceptions are determined on a case-by-case basis. The stipulation continues to apply to all other sites within the leasehold. The Authorized Officer may grant an exception to a stipulation if it is determined that the factors leading to its inclusion in the lease have changed sufficiently such that:

1. the protection provided by the stipulation is no longer justified or necessary to meet resource objectives established in the RMP; or
2. proposed operations would not cause unacceptable impacts.

The Authorized Officer may require additional plans of development, surveys, mitigation proposals, or environmental analysis, and may be required to consult with other government agencies and/or the public in order to make this determination.

All Programs Except Fluid Minerals

An exception may be granted by the Authorized Officer if it can be demonstrated that the surface-disturbing activity:

1. would not cause adverse impacts or would have negligible impacts to the resource or resource use that the stipulation was designated to protect; or
2. would improve the protected resource or resource use as defined by RMP objectives, standards, or conditions in the stipulation (e.g., fuels treatment that improves forbs in key wildlife habitat, or trail construction for resource protection in an ACEC or elsewhere);
3. is necessary to meet health and safety objectives such as fire suppression or fire emergency stabilization and rehabilitation; or
4. is necessary to protect federal mineral estate.

B.2.3 Standard Modification

A modification is a change to the provisions of a lease stipulation, either temporarily or for the term of the lease. Depending on the specific modification, the stipulation may or may not apply to all sites within the leasehold to which the restrictive criteria are applied.

In accordance with the provisions of 43 CFR 3101.1-4, the Authorized Officer may modify a stipulation or the area subject to the stipulation if it is determined that the factors leading to its inclusion in the lease have changed sufficiently. The Authorized Officer may modify a stipulation as a result of new information if:

1. the protection provided by the stipulation is no longer justified or necessary to meet resource objectives established in the RMP;
2. the protection provided by the stipulation is no longer sufficient to meet resource objectives established in the RMP; or
3. proposed operations would not cause unacceptable impacts.

The Authorized Officer may require additional plans of development, surveys, mitigation proposals, or environmental analysis, and may be required to consult with other government agencies and/or the public in order to make this determination, and the modification may be subject to public review for at least a 30-day period.

B.2.4 Standard Waiver

A waiver is a permanent exemption from a lease stipulation. When a waiver is granted, the stipulation no longer applies anywhere within the leasehold.

In accordance with the provisions of 43 CFR 3101.1-4, the Authorized Officer may waive a stipulation if it is determined that the factors leading to its inclusion in the lease no longer exist. The Authorized Officer may require additional plans of development, surveys, mitigation proposals, or environmental analysis, and may be required to consult with other government agencies and/or the public in order to make this determination. The waiver may be subject to public review for at least a 30-day period.

No permanent exemptions or waivers are authorized unless the areas mapped as possessing the attributes are field verified by BLM staff to lack those attributes.

B.3 STANDARD TERMS AND CONDITIONS FOR FLUID MINERAL LEASING

Oil and gas development is subject to standard terms and conditions of the lease. Onshore Oil and Gas Order No. 1 (Onshore Oil and Gas Operations; Federal and Indian Oil and Gas Leases; Approval of Operations) regulations (43 CFR 3160) give the BLM the ability to relocate proposed operations up to 200 meters (656 feet) and prohibit surface-disturbing operations for a period not to exceed 60 days.

Table B-1
Summary of No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities[1]

Stipulation Number (*Existing*/**New**)[2]	Protected Resource	Alternative				Fluid Minerals Only	All Surface-disturbing Activities
		A	B	C	D		
	Water Resources						
NSO-1 *(ROWA)*	Major River Corridors			•	•		✓
HYDROLOGY RIVER NSO CO	Hydrology River		•				✓
NSO-2 *(ROWA)*	Streams/Springs Possessing Lotic Riparian Characteristics		•	•			✓
NSO-3	Definable Streams			•			✓
NSO-4 *(ROWA)*	Lentic Riparian Areas (including springs, seeps, and fens)		•	•			✓
NSO-1 (BLM 1987)	No Surface Occupancy (Grand Junction Municipal Watershed)	•				✓	
NSO-5	Palisade and Grand Junction Municipal Watersheds		•				✓
NSO-6 *(ROWA)*	Palisade and Grand Junction Municipal Watersheds, Collbran and Mesa/Powderhorn Source Water Protection Areas, and Jerry Creek Watershed			•			✓
NSO-7	Water Intake Zone 3			•			✓
	Soils and Geology						
NSO-1 (ROWA) (Exhibit GJ-1AB) (BLM 1987)	No Surface Occupancy (Soils in the Baxter/Douglas Slump Area)	•				✓	
NSO-1(ROWA) (Exhibit GJ-1AA) (BLM 1987)	No Surface Occupancy (Soils in the Plateau Area)	•				✓	
NSO-9 *(ROWA)*	Fragile Soils			•			✓
NSO-3 (BLM 1987)	Steep Slopes	•				✓	
GEOLOGY SLOPE NSO CO	Geology Slope		•				✓
GEOLOGY SOIL NSO CO	Geology Soil		•				✓
NSO-10 *(ROWA)*	Steep Slopes Greater than or Equal to 40 Percent			•	•		✓
	Vegetation						
NSO-2 *(ROWA)*	Streams/Springs Possessing Lotic Riparian Characteristics		•	•			✓
NSO-4 *(ROWA)*	Lentic Riparian Areas (including springs, seeps, and fens)		•	•			✓

Table B-1
Summary of No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities[1]

Stipulation Number (*Existing*/**New**)[2]	Protected Resource	Alternative				Fluid Minerals Only	All Surface-disturbing Activities
		A	B	C	D		
	Special Status Species						
NSO-11 *(ROWA)*	Conservation Populations of Cutthroat Trout				•		✓
NSO-1 *(ROWA)*	Major River Corridors			•	•		✓
HYDROLOGY RIVER NSO CO	Hydrology River		•				✓
NSO-2 *(ROWA)*	Streams/Springs Possessing Lotic Riparian Characteristics		•	•			✓
NSO-1 (Partial ROWA) (BLM 1987)	No Surface Occupancy (ACECs: Badger Wash, Pyramid Rock, and Unaweep Seep)	•				✓	
NSO-12 *(Partial ROWA)*	ACECs		•	•	•		✓
NSO-13 *(ROWA)*	Current and Historically Occupied Habitat and Critical Habitat of Threatened, Endangered, Proposed, and Candidate Plant and Animal Species		•	•			✓
NSO-14 *(ROWA)*	Currently Occupied Habitat of Threatened, Endangered, Proposed, and Candidate Species				•		✓
NSO-15 *(ROWA)*	BLM Sensitive Plant Species' Occupied Habitat			•			✓
NSO-16 *(ROWA)*	Osprey Nest Sites			•			✓
NSO-17 *(ROWA)*	Ferruginous Hawk Nest Sites			•			✓
NSO-18 *(ROWA)*	Red-tailed Hawk Nest Sites			•			✓
NSO-19 *(ROWA)*	Swainson's Hawk Nest Sites			•			✓
NSO-20 *(ROWA)*	Peregrine Falcon Nest Sites			•			✓
NSO-21 *(ROWA)*	Prairie Falcon Nest Sites			•			✓
NSO-22 *(ROWA)*	Other Raptor Species (accipiters, falcons [except kestrel], buteos, and owls)			•			✓
NSO-23 *(ROWA)*	Golden Eagle Nest Sites		•	•	•		✓
NSO-24 *(ROWA)*	Bald Eagle Nest Sites		•	•	•		✓
NSO-25 *(ROWA)*	Sage-grouse Leks, Nesting, and Early Brood-rearing Habitat (6.4 kilometers [4 miles])		•	•			✓
NSO-26 *(ROWA)*	Canyon Treefrog, Midget Faded Rattlesnake, Northern Leopard Frog, Great Basin Spadefoot, Long-nosed Leopard Lizard, Boreal Toad (no buffer)		•		•		✓
NSO-27 *(ROWA)*	Canyon Treefrog, Midget Faded Rattlesnake, Northern Leopard Frog, Great Basin Spadefoot, Boreal Toad (805 meters [0.5-mile])			•			✓

Table B-1
Summary of No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities[1]

Stipulation Number (*Existing*/**New**)[2]	Protected Resource	Alternative				Fluid Minerals Only	All Surface-disturbing Activities
		A	B	C	D		
NSO-28 *(ROWA)*	Special Status Bat Species' Roost Sites and Winter Hibernacula			•			✓
WILDLIFE BAT NSO CO	Wildlife Bat		•				✓
NSO-29 *(ROWA)*	Active Kit Fox Dens			•			✓
NSO-30 *(ROWA)*	Occupied Prairie Dog Towns (no buffer)		•				✓
NSO-31 *(ROWA)*	Occupied Prairie Dog Towns (46 meters [150 feet])			•			✓
	Fish and Wildlife						
NSO-32 *(ROWA)*	Research Sites		•	•	•		✓
NSO-12 *(Partial ROWA)*	ACECs		•	•	•		✓
NSO-1 (ROWA) (BLM 1987)	No Surface Occupancy (Wildlife Habitat in Rough Canyon)	•				✓	
NSO-1 (ROWA) (BLM 1987)	No Surface Occupancy (State Wildlife Areas)	•				✓	
RECREATION PARKS NSO CO	Recreation Parks		•				✓
NSO-1 (Exhibit GJ-1DC) (BLM 1987)	No Surface Occupancy (Elk Calving Sites)	•				✓	
NSO-34 *(ROWA)*	Elk Production Area		•	•	•		✓
WILDLIFE HABITAT NSO CO	Wildlife Habitat		•				✓
NSO-35 *(Partial ROWA)*	Wildlife Emphasis Areas			•			✓
	Wild Horses						
NSO-36 *(ROWA)*	Little Book Cliffs Wild Horse Range		•	•			✓
	Cultural Resources						
NSO-37 *(ROWA Alternatives B and C)*	Allocation to Conservation Use Category		•	•	•		✓
NSO-38 *(ROWA Alternatives B and C)*	Allocation to Traditional Use Category		•	•	•		✓
NSO-1 (BLM 1987)	No Surface Occupancy (Cultural Resources)	•				✓	
NSO-39 *(ROWA Alternatives B and*	Cultural Resources (Indian Creek)		•	•	•		✓

Table B-1
Summary of No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities[1]

Stipulation Number (*Existing*/**New**)[2]	Protected Resource	Alternative				Fluid Minerals Only	All Surface-disturbing Activities
		A	B	C	D		
C)							
	Visual Resources						
NSO-1 (BLM 1987)	No Surface Occupancy (Visual Resources)	•				✓	
VISUAL CLASS I NSO CO	Visual Class I		•				✓
NSO-40	VRM (Class I and the Goblins)			•	•		✓
	Lands Managed for Wilderness Characteristics						
NSO-41	Lands Managed for Wilderness Characteristics			•			✓
LANDS WITH WILDERNESS CHARACTERISTICS NSO CO	Lands with Wilderness Characteristics		•				✓
	Recreation and Visitor Services						
NSO-1 (ROWA) (BLM 1987)	No Surface Occupancy (Recreational Resources at The Palisade ONA, established recreation sites, Island Acres, Vega State Recreation Area, Highline Reservoir Recreation Area, Rough Canyon ACEC, Hunter/Garvey backcountry, Granite Creek Canyons/Cliffs, Bangs Canyon, Dolores River, and Gunnison River)	•				✓	
NSO-42 *(Partial ROWA)*	Special Recreation Management Areas			•	•		✓
RECREATION SRMA NSO CO	Recreation SRMA		•				✓
RECREATION PARKS NSO CO	Recreation Parks		•				✓
	Fluid Minerals (Oil and Gas and Geothermal Resources)						
NSO-1 (BLM 1987)	No Surface Occupancy (State Wildlife Areas)	•				✓	
RECREATION PARKS NSO CO	Recreation Parks		•				✓
	ACECs						
NSO-1 (Partial ROWA) (BLM 1987)	No Surface Occupancy (ACECs: Badger Wash, Pyramid Rock, and Unaweep Seep)	•				✓	

Table B-1
Summary of No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities[1]

Stipulation Number (*Existing*/**New**)[2]	Protected Resource	Alternative				Fluid Minerals Only	All Surface-disturbing Activities
		A	B	C	D		
NSO-12 *(Partial ROWA)*	ACECs		•	•	•		✓
	Wilderness Study Areas						
NSO-43	Wilderness Study Areas	•	•	•	•		✓
	Wild and Scenic Rivers						
NSO-44 *(ROWA)*	WSR Study Segments Classified as Wild			•			✓
	National Trails						
NSO-45 *(ROWA)*	Old Spanish National Historic Trail (50 meters [164 feet])		•		•		✓
NSO-46 *(ROWA)*	Old Spanish National Historic Trail (805 meters [0.5-mile])			•			✓

[1]Details of these stipulations are provided in Table B-5, No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities.
[2]Existing stipulations currently in effect in Alternative A, current management, are noted in italics and are from the current RMP (BLM 1987).
[3]For Alternative B, this stipulation applies to all-surface disturbing activities except fluid minerals. For the other alternative(s), it applies to all surface-disturbing activities.

Table B-2
Summary of Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities[1]

Stipulation Number (*Existing*/**New**)[2]	Protected Resource	Alternative				Fluid Minerals Only	All Surface-disturbing Activities
		A	B	C	D		
	Water Resources						
CSU-39	Roan and Carr Creeks ACEC		•				✓
CSU-1 *(ROWA)*	Major River Corridors			•			✓
CSU-7 (ROWA) (BLM 1987)	Perennial Streams Water Quality	•				✓	
CSU-2 *(ROWA)*	Hydrologic Features/Riparian			•	•		✓
CSU-3 *(ROWA)*	Definable Streams		•				✓
CSU-6 (BLM 1987)	Watersheds	•				✓	
CSU-4 *(ROWA)*	Collbran and Mesa/Powderhorn Source Water Protection Areas, and Jerry Creek Watershed		•		•		✓
	Soils and Geology						
GEOLOGY SOIL CSU CO	Geology Soil		•				✓
CSU-6 *(ROWA)*	Mapped Mancos Shale and Saline Soils			•	•		✓
CSU-7	Natural Slopes			•			✓
	Vegetation						
PLANT COMMUNITY CSU CO	Plant Community		•				✓
CSU-8 *(ROWA)*	Old Growth Forests and Woodlands			•	•		✓
	Special Status Species						
CSU-9 *(ROWA)*	BLM Sensitive Plant Species Occupied Habitat		•				✓
CSU-10 *(ROWA)*	Wildlife Habitat		•	•			✓
CSU-1 *(ROWA)*	Major River Corridors			•			✓
CSU-11 *(ROWA)*	Significant Plant Communities (200 meters [656 feet])			•			✓
CSU-12 *(ROWA)*	Significant Plant Communities (no buffer)				•		✓
CSU-13 *(ROWA)*	Osprey Nest Sites		•		•		✓
CSU-14 *(ROWA)*	Ferruginous Hawk Nest Sites		•		•		✓
CSU-15 *(ROWA)*	Red-tailed Hawk Nest Sites		•		•		✓
CSU-16 *(ROWA)*	Swainson's Hawk Nest Sites		•		•		✓
CSU-17 *(ROWA)*	Peregrine Falcon Nest Sites		•		•		✓
CSU-18 *(ROWA)*	Prairie Falcon Nest Sites		•		•		✓
CSU-19 *(ROWA)*	Other Raptor Species (accipiters, falcons [except kestrel], buteos, and owls)		•		•		✓
CSU-20 *(ROWA)*	Sage-grouse Nesting and Early Brood-rearing Habitat				•		✓
CSU-21 *(ROWA)*	Special Status Bat Species' Roost Sites and Winter Hibernacula				•		✓

Table B-2
Summary of Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities[1]

Stipulation Number (*Existing*/**New**)[2]	Protected Resource	Alternative				Fluid Minerals Only	All Surface-disturbing Activities
		A	B	C	D		
CSU-22 *(ROWA)*	Kit Fox Dens		•		•		✓
CSU-23 *(ROWA)*	Occupied Prairie Dog Towns		•		•		✓
	Fish and Wildlife						
CSU-1 *(ROWA)*	Major River Corridors			•			✓
CSU-10 *(ROWA)*	Wildlife Habitat		•	•			✓
WILDLIFE HABITAT CSU CO	Wildlife Habitat		•				✓
CSU-24 *(ROWA)*	Deer and Elk Migration and Movement Corridors		•	•			✓
CSU-25	Wildlife Emphasis Areas			•	•		✓
	Wild Horses						
CSU-2 (Exhibit GJ-2FA) (BLM 1987)	Scenic and Natural Values (Little Book Cliffs Wild Horse Area)	•				✓	
CSU-26	Little Book Cliffs Wild Horse Range				•		✓
	Cultural Resources						
CSU-27 *(ROWA Alternatives B and C)*	Allocation to Scientific Use Category		•	•	•		✓
CSU-28 *(ROWA Alternatives B and C)*	Allocation to Public Use Category		•	•	•		✓
CSU-29 *(ROWA)*	Sub-surface Inventory		•	•	•		✓
CSU-5 (ROWA) (BLM 1987)	Known Cultural Resource Values	•				✓	
	Visual Resources						
CSU-30 *(ROWA)*	VRM Class II		•	•	•		✓
CSU-2 (BLM 1987)	Scenic and Natural Values (Bangs Benches, the Book Cliffs, established BLM recreation sites, Grand Mesa Slopes, Granite Creek Benches, Gunnison River corridor, highway corridors, Hunter/Garvey, Little Book Cliffs Wild Horse Area, Sinbad Valley, South Shale Ridge, and Unaweep Valley)	•				✓	
	Recreation and Visitor Services						
CSU-2 (BLM 1987)	Scenic and Natural Values (recreation resources at Bangs Benches, Granite Creek Benches, Hunter/Garvey Benches, and Lower Gunnison River)	•				✓	
CSU-31 *(ROWA)*	Recreation		•	•	•		✓
CSU-32	Recreation Management Areas		•	•	•		✓

Table B-2
Summary of Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities[1]

Stipulation Number (*Existing*/**New**)[2]	Protected Resource	Alternative				Fluid Minerals Only	All Surface-disturbing Activities
		A	B	C	D		
	Lands and Realty						
DISPOSAL CSU CO	Disposal		•				✓
CSU-33	Disposal Tracts				•		✓
	Coal						
COAL MINE CSU CO	Coal Mine		•			✓	
CSU-34	Federally Leased Coal			•	•	✓	
	ACEC						
CSU-39	Roan and Carr Creeks ACEC		•				✓
	Wild and Scenic Rivers						
CSU-35 *(ROWA)*	WSR Study Segments Classified as Scenic and Recreational			•			✓
CSU-36	Old Spanish National Historic Trail			•			✓
CSU-37	Scenic Byways (805 meters [0.5-mile])		•	•			✓
CSU-38	Scenic Byways (402 meters [0.25-mile])				•		✓

[1]Details of these stipulations are provided in Table B-6, Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities.

[2]Existing stipulations currently in effect in Alternative A, current management, are noted in italics and are from the current RMP (BLM 1987).

[3]For Alternative B, this stipulation applies to all-surface disturbing activities except fluid minerals. For the other alternative(s), it applies to all surface-disturbing activities.

Table B-3
Summary of Timing Limitation (TL) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities[1]

Stipulation Number (*Existing*/**New**)[2]	Protected Resource	Alternative				Fluid Minerals Only	All Surface-disturbing Activities
		A	B	C	D		
	Special Status Species						
TL-1 *(ROWA)*	Salmonid and Native, Non-salmonid Fishes (brown, brook, rainbow, and cutthroat trout; bluehead and flannelmouth sucker; roundtail chub; mountain whitefish; Paiute and mottled sculpin; and speckled dace)		•	•			✓
TL-2 *(ROWA)*	Occupied Cutthroat Trout Waters				•		✓
TL-3 *(ROWA)*	Migratory Bird Habitat		•	•			✓
TL-4 *(ROWA)*	Birds of Conservation Concern's Habitat				•		✓
WILDLIFE RAPTOR NESTS TL CO	Raptor Nests		•				✓
WILDLIFE SENSITIVE RAPTOR NESTS TL CO	Sensitive Raptor Nests		•				✓
TL-5 *(ROWA)*	Osprey Nests			•	•		✓
TL-6 *(ROWA)*	Ferruginous Hawk Nests			•	•		✓
TL-7 *(ROWA)*	Red-tailed Hawk Nests			•	•		✓
TL-8 *(ROWA)*	Swainson's Hawk Nest Sites			•	•		✓
TL-14 (ROWA) (Exhibit GJ-14EB) (BLM 1987)	Threatened and Endangered Seasonal Habitat (Peregrine Falcon Habitat)	•				✓	
TL-9 *(ROWA)*	Peregrine and Prairie Falcon Nest Sites			•	•		✓
TL-10 *(ROWA)*	Goshawk Nest Sites			•	•		✓
TL-11 *(ROWA)*	Burrowing Owl Burrows and Nest Sites			•	•		✓
TL-12 *(ROWA)*	Other Raptor Species (accipiters, falcons [except kestrel], buteos, and owls)			•	•		✓
TL-13 *(ROWA)*	Golden Eagle Nest Sites		•	•	•		✓
TL-14 (ROWA) (Exhibit GJ-14EA) (BLM 1987)	Threatened and Endangered Seasonal Habitat (Bald Eagle Habitat)	•				✓	
TL-14 *(ROWA)*	Bald Eagle Nest Sites		•	•	•		✓
TL-15 *(ROWA)*	Bald Eagle Winter Roost		•	•	•		✓
TL-16 *(ROWA)*	Occupied Sage-grouse Winter Habitat		•	•			✓
TL-17 *(ROWA)*	Sage-grouse Leks (6.4 kilometers [4 miles])		•				✓
TL-18 *(ROWA)*	Sage-grouse Leks, Nesting, and Early Brood-rearing Habitat (966 meters [0.6-mile])				•		✓
TL-19 *(ROWA)*	Occupied Prairie Dog Towns		•		•		✓

Table B-3
Summary of Timing Limitation (TL) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities[1]

Stipulation Number (*Existing*/**New**)[2]	Protected Resource	Alternative				Fluid Minerals Only	All Surface-disturbing Activities
		A	B	C	D		
	Fish and Wildlife						
TL-1 *(ROWA)*	Salmonid and Native, Non-salmonid Fishes (brown, brook, rainbow, and cutthroat trout; bluehead and flannelmouth sucker; roundtail chub; mountain whitefish; Paiute and mottled sculpin; and speckled dace)		•	•			✓[3]
TL-2 *(ROWA)*	Occupied Cutthroat Trout Waters				•		✓
TL-12 (ROWA) (BLM 1987)	Deer and Elk Winter Range	•				✓	
TL-20 *(ROWA)*	Big Game Winter Range		•	•	•		✓
TL-9 (ROWA) (BLM 1987)	Bighorn Seasonal Stipulation	•				✓	
TL-4 (ROWA) (BLM 1987)	Elk Calving Area	•				✓	
BIG GAME PRODUCTION TL CO	Big Game Production		•				✓
TL-21 *(ROWA)*	Big Game Production Areas			•			✓
TL-22 *(ROWA)*	Pronghorn Wintering Habitat		•	•	•		✓
	Wild Horses						
TL-10 (ROWA) (BLM 1987)	Wild Horse Winter Range	•				✓	
TL-11 (ROWA) (BLM 1987)/**TL-23** *(ROWA)*	Wild Horse Foaling Area	•			•	✓	

[1]Details of these stipulations are provided in Table B-7, Timing Limitation (TL) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities.
[2]Existing stipulations currently in effect in Alternative A, current management, are noted in italics and are from the current RMP (BLM 1987).
[3]For Alternative B, this stipulation applies to all-surface disturbing activities except fluid minerals. For the other alternative(s), it applies to all surface-disturbing activities.

Table B-4
Summary of Lease Notices (LN)
Applicable to Fluid Mineral Leasing[1]

Stipulation Number (*Existing*/**New**)[2]	Protected Resource	Alternative			
		A	**B**	**C**	**D**
	Air Resources				
CO-56	Air Resources		•		
	Water Resources				
LN-17	Palisade Municipal Watershed	•			
LN-1	Source Water Protection Areas		•		
LN-2	Municipal Watersheds and Source Water Protection Areas				•
LN-13	Threatened and Endangered Species Habitat	•			
LN-3	Biological Inventories		•	•	•
LN-15	Colorado Hookless Cactus (Formerly Uinta Basin Hookless Cactus)	•			
LN-4	Threatened and Endangered Species / Colorado Hookless Cactus		•	•	•
	Fish and Wildlife				
LN-3	Biological Inventories		•	•	•
LN-5	Working in Wildlife Habitat		•	•	
LN-6	Class 4 and 5 Paleontological Areas	•	•	•	•
LN-16/ **LN-7**	Powderhorn Ski Area	•	•		•

[1]Details of these stipulations are provided in Table B-8, Lease Notices (LN) and Additional Required Conditions of Approval Applicable to Fluid Mineral Leasing.
[2]Existing stipulations currently in effect in Alternative A, current management, are noted in italics and are from the current RMP (BLM 1987).

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	Water Resources				
NSO-1 *(ROWA)* **Major River Corridors.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within 402 meters (0.25-mile/1,320 feet) of the ordinary high-water mark (bank-full stage) or within 100 meters (328 feet) of the 100-year floodplain (whichever area is greatest) of the Colorado, Gunnison, and Dolores Rivers. **PURPOSE:** To protect rivers and adjacent habitat that provide: a) special status fish and wildlife species habitat; b) important riparian values; c) water quality/filtering values; d) waterfowl and shorebird production values; e) valuable amphibian habitat; f) 100-year floodplain; and g) high scenic and recreation values of the three major rivers (Colorado, Gunnison, and Dolores). Minimizing potential deterioration of water quality and high scenic and recreation values; maintaining natural hydrologic function and condition of stream channels, banks, floodplains, and riparian communities; and preserving wildlife habitat including designated critical habitat for federally listed fish species. The buffers are sized to accommodate the rivers' larger floodplains and wider riparian zones. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions, which are subject to CSU (site-specific relocation) stipulations, are as follows (note: both actions must be met for exception to be granted): • Essential future actions in which implementation of a professionally engineered design, construction, maintenance, and reclamation plan can mitigate to the fullest extent practicable all potential resource damage associated with the proposed action. Design and construction for a 100-year flood event along strait and stable stream reaches would be required; • New trail construction resulting in a disturbance corridor less than or equal to 1.2 meters (48 inches) wide open to nonmotorized use. Trails would be constructed per BLM minimum design standards; and • Section 7 consultation with USFWS on threatened or endangered species and/or their critical habitat has been completed.			•	•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	MODIFICATION: Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is required to minimize potential deterioration of water quality, high scenic and recreation values, maintain natural hydrologic function and condition of stream channels, banks, floodplains, and riparian communities, and preserve wildlife habitat including designated critical habitat for federally listed fish species. The buffers are sized to accommodate the rivers' larger floodplains and wider riparian zones.				
HYDROLOGY RIVER NSO CO ***All Surface-disturbing Activities***	**STIPULATION:** No surface occupancy or use is allowed within 400 meters (1312 feet) of the ordinary high-water mark (bank-full stage) or within 100 meters (328 feet) of the 100-year floodplain (whichever area is greatest) on the following major river: <NAME> **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To protect rivers and adjacent aquatic habitat that provide: a) *special status* or *critical* fish and wildlife species habitat: b) important riparian values: c) water quality/filtering values: d) waterfowl and shorebird production values: e) valuable amphibian habitat: f) 100-year floodplain, and g) high scenic and recreation values of major rivers. Minimizing potential deterioration of water quality, high scenic and recreation values, maintain natural hydrologic function and condition of stream channels, banks, floodplains, and riparian communities, and preserve wildlife habitat including designated critical habitat for federally listed fish species. The buffers are sized to accommodate the rivers' larger floodplains and wider riparian zones. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2).				•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	JUSTIFICATION: This stipulation is required to minimize potential deterioration of water quality, high scenic and recreation values, maintain natural hydrologic function and condition of stream channels, banks, floodplains, and riparian communities, and preserve wildlife habitat including designated critical habitat for federally listed fish species. The buffers are sized to accommodate the rivers' larger floodplains and wider riparian zones.				
NSO-2 *(ROWA)* **Streams/ Springs Possessing Lotic Riparian Characteristics.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within a minimum distance of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage). Where the riparian corridor width is greater than 100 meters (328 feet) from bank-full, prohibit surface occupancy and use and surface-disturbing activities within the riparian zone. **PURPOSE:** To protect water quality and aquatic values and prevent channel degradation, as riparian corridors/flood-prone areas are lands adjacent to waterbodies where activities on land are likely to affect water quality. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions, which are subject to CSU (site-specific relocation) stipulations, are as follows: • Necessary site restoration and management as dictated by initial analysis or later evaluation/monitoring. • Essential stream crossings associated with linear transportation, and utility crossings. • For actions requiring individual permits through the USACE, require a Licensed Professional Engineer to approve and stamp project design, implementation, and reclamation plans. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to maintain the natural hydrologic function and condition of mountain and rangeland stream systems. Properly functioning stream channels, stream banks, and floodplains (including the riparian zone)		•	•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	transport and store sediment at a rate which is in balance with each system's typical flow regime. Any alteration of this system can create an imbalance between sediment supply and flow, resulting in accelerated erosion, decreased water quality, and degraded habitat conditions and for special status aquatic wildlife. This stipulation is also essential to protect fish bearing streams in the GJFO.				
NSO-3 **Definable Streams.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within a minimum distance of 30 meters (98 feet) from the edge of the ordinary high-water mark (bank-full stage). **PURPOSE:** To protect water quality and aquatic values and prevent channel degradation. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary because any alteration of properly functioning stream channels, stream banks, and floodplains (including the xeririparian zone) can create an imbalance between sediment supply and stream discharge resulting in accelerated erosion and decreased water quality.			•	
NSO-4 *(ROWA)* **Lentic Riparian Areas (including springs, seeps, and fens).** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within 100 meters (328 feet) from the mapped extent of perennial, intermittent, and ephemeral streams; riparian areas, fens and/or wetlands; and water impoundments. For streams, the buffer will be measured from ordinary high-water mark (bank-full stage), whereas for wetland features, the buffer will be measured from the edge of the mapped extent. **PURPOSE:** To maintain the proper functioning condition, including the vegetation, hydrologic, and geomorphic functionality of wetland features. To protect water quality, riparian zones, fens, fish habitat, and aquatic habitat, and to provide a clean, reliable source of water for downstream users.		•	•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	Buffers are expected to indirectly benefit migratory birds, wildlife habitat, amphibians, and other species. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary because surface disturbance within the minimum 100-meter (328-foot) buffer may impair proper function and condition of springs, seeps, and fens. Source areas (for springs, seeps, and fens) are delicate and susceptible to any alteration of natural flow patterns, soil infiltration rates, or drainages within the contributing watershed. Changes to these variables may dewater lentic riparian areas, greatly impairing the system's ability to properly function.				
NSO-1 *(BLM 1987)* **No Surface Occupancy (Grand Junction Municipal Watershed).** 1,400 acres ***Fluid Minerals Only***	**STIPULATION:** No occupancy or other activities (fluid minerals only) will be allowed in the Grand Junction municipal watershed on the following portions of this lease: <LEGAL_DESCRIPTIONS> **PURPOSE:** To protect municipal watersheds providing domestic water. **EXCEPTION:** Exceptions, which are subject to CSU (site-specific relocation) stipulations, are as follows: • New trail construction resulting in a disturbance corridor less than or equal to 1.2 meters (48 inches) wide open to nonmotorized use. Trials would be constructed per BLM minimum design standards. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2).	•			
NSO-5 **No Surface Occupancy (Palisade and Grand Junction Municipal**	**STIPULATION:** Prohibit surface occupancy and use and other surface-disturbing activities in the Palisade and Grand Junction municipal watersheds. **PURPOSE:** To protect municipal watersheds providing drinking water to local communities.		•		

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
Watersheds). *BLM surface/ federal minerals:* 900 acres *Private or State surface/federal minerals:* 8,300 acres ***All Surface-disturbing Activities***	**EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions would require professionally engineered design and construction for a 100-year flood event along strait and stable stream reaches. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to reduce potential for groundwater contamination and/or dewatering of municipal sources.				
NSO-6 *(ROWA)* **No Surface Occupancy (Palisade and Grand Junction Municipal Watersheds, Collbran and Mesa/ Powderhorn Source Water Protection Areas, and Jerry Creek Watershed).** *BLM surface/ federal minerals:* 34,700 acres *Private or State surface/federal minerals*: 27,600 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and other activities in the Palisade and Grand Junction municipal watersheds, Collbran and Mesa/Powderhorn source water protection areas, and Jerry Creek watershed. **PURPOSE:** To protect municipal watersheds providing drinking water to local communities. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions would require professionally engineered design and construction for a 100-year flood event along strait and stable stream reaches. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to reduce potential for groundwater contamination and/or dewatering of domestic and municipal sources.			•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
NSO-7 **Water Intake Zone 3.** 3,100 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and other surface-disturbing activities within state identified sensitivity zone 3. In cases where this zone could not be determined through analytic calculations, zone 3 will be defined as a 4-kilometer (2.5-mile) radius around the intake or be based on professional interpretation of geology, topography, and location of municipal wells. The boundary of zone 3 is subject to change based on increased knowledge of groundwater hydrology in these areas. **PURPOSE:** To protect municipal water. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to reduce potential for groundwater contamination and/or dewatering of domestic and municipal sources.			•	
	Soils and Geology				
NSO-1 (ROWA) (Exhibit GJ-1AB) (BLM 1987) **No Surface Occupancy (Soils in the Baxter/Douglas Slump Area).** 53,100 acres ***Fluid Minerals Only***	**STIPULATION:** No occupancy or other activities will be allowed on the following portions of this lease: <LEGAL_DESCRIPTIONS> **PURPOSE:** To protect soils in the Baxter/Douglas slump area. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified.	•			
NSO-1 (ROWA) (Exhibit GJ-1AA) (BLM 1987) **No Surface Occupancy**	**STIPULATION:** No occupancy or other activities will be allowed on the following portions of this lease: <LEGAL_DESCRIPTIONS> **PURPOSE:** To protect soils in the Plateau area.	•			

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
(Soils in the Plateau Area). 900 acres ***Fluid Minerals Only***	**EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change, or if the lease can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified. If this stipulation is waived or reduced in scope, any of the other attached stipulations (if any) may impact operations on this lease.				
NSO-9 *(ROWA)* **Fragile Soils.** *BLM surface/ federal minerals:* 481,600 acres *Private or state surface/federal minerals:* 20,700 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within a minimum of 25 meters (82 feet) of fragile soils (distance may be extended based on site-specific conditions). Onsite evaluation of site-specific soil characteristics may be conducted by BLM or a qualified third party to verify Natural Resource Conservation Service soil mapping unit descriptions are appropriate to the site. These evaluations would be conducted at the discretion of the BLM SWA specialist. **PURPOSE:** To maintain site stability, site productivity, prevent excessive soil erosion and sediment transport, and increase reclamation potential. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions, which are subject to CSU (site-specific relocation) stipulations, are as follows: • Essential future actions in which implementation of a professionally engineered design, construction, maintenance, and reclamation plan can mitigate to the fullest extent practicable all potential resource damage associated with the proposed action. • Temporary actions associated with solid mineral exploration (e.g., access roads, exploratory bore holes less than or equal to 20 centimeters [8 inches] in diameter) in which the reclamation process will be initiated a maximum of 1 calendar year from the beginning of construction will be allowed on a case-by-case basis at the discretion of the BLM Authorized Officer. Construction activities will be limited to dry season conditions and subject to site-specific			•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	mitigation based on soil characteristics. Temporary status of exploration actions may be extended up to a maximum of 3 years (from initial construction) given monitoring results/onsite inspection indicate soil-stabilizing techniques and drainages structures are functional and adequate to protect soil and watershed health. • Stipulation does not apply to OHV open areas. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary because accelerated erosion from fragile soils in the GJFO is a major contributor of nonpoint source pollution in rivers and streams. The 25-meter (82-foot) buffer is necessary to adequately protect fragile soils from stormwater runoff and other impacts associated with surface-disturbing actions.				
NSO-3 *(BLM 1987)* **Steep Slopes.** 318,200 acres ***Fluid Minerals Only***	**STIPULATION:** The following portions of the lease include land with greater than 40 percent slopes: <LEGAL_DESCRIPTIONS>. In order to avoid or mitigate unacceptable impacts to soil, water, and vegetation resources on these lands, special design practices may be necessary and higher than normal costs may result. Where impacts cannot be mitigated to satisfaction of the BLM Authorized Officer, no surface-disturbing activities shall be allowed. **PURPOSE:** To maintain site stability, site productivity, prevent excessive soil erosion and sediment transport, and increase reclamation potential. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified.	•			

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
GEOLOGY SOIL NSO CO *BLM surface/ federal minerals: 54,500 acres* *Private or state surface/federal minerals: 3,100 acres* ***All Surface-disturbing Activities***	**STIPULATION:** No surface occupancy or use is allowed on lands with soils, as mapped in the Resource Management Plan, BLM's GIS database or other maps provided by local, state, federal or tribal agencies that are analyzed and accepted by the BLM, with the following special characteristics: Baxter/Douglas Pass Slump Area and the Plateau Creek Slump Area. **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To minimize the risk of mass wasting and sedimentation; reduce reclamation costs; protect soil productivity, rare, or sensitive biota; minimize risk to water bodies, fisheries, and aquatic species habitats; and protect human health and safety (e.g., from landslides and mass wasting). **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION: JUSTIFICATION:** This stipulation is necessary because accelerated erosion from fragile soils in the GJFO is a major contributor of nonpoint source pollution in rivers and streams. The 25-meter (82-foot) buffer is necessary to adequately protect fragile soils from stormwater runoff and other impacts associated with surface-disturbing actions.		•		
GEOLOGY SLOPE NSO CO *BLM surface/ federal minerals:* 347,700 acres *Private or State surface/federal minerals*: 28,800 acres	**STIPULATION:** Prohibit surface occupancy and use on lands with steep slopes greater than 40 percent. **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To minimize the risk of mass wasting and sedimentation; reduce reclamation costs; protect soil productivity, rare, or sensitive biota; minimize risk to water bodies, fisheries, and aquatic species habitats; and protect human health and safety (e.g., from landslides and mass wasting).		•		

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
All Surface-disturbing Activities	**EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2) **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary because accelerated erosion from soils on steep slopes in the GJFO can be a major contributor of nonpoint source pollution in rivers and streams.				
NSO-10 *(ROWA)* **Steep Slopes Greater than or Equal to 40 Percent.** *BLM surface/ federal minerals:* 347,700 acres *Private or State surface/federal minerals*: 28,800 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities on lands with steep slopes greater than or equal to 40 percent. **PURPOSE:** To minimize the risk of mass wasting and sedimentation; reduce reclamation costs; protect soil productivity, rare, or sensitive biota; minimize risk to water bodies, fisheries, and aquatic species habitats; and protect human health and safety (from landslides, mass wasting, etc.). **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions, which are subject to CSU (site-specific relocation) stipulations, are as follows: • Above-ground electrical transmission lines. • Essential future actions in which implementation of a professionally engineered design, construction, maintenance, and reclamation plan can mitigate to the fullest extent practicable all potential resource damage associated with the proposed action. • Alternative D only: Temporary actions associated with coal exploration (e.g., access roads, exploratory bore holes less than or equal to 20 centimeters [8 inches] in diameter) in which the reclamation process will be initiated a maximum of 1 calendar year from the beginning of construction will be allowed on a case-by-case basis at the discretion of the Authorized Officer. Construction activities will be limited to dry season conditions and subject to site-specific mitigation. Temporary status of exploration actions may be extended up to a maximum of 3 years (from initial construction) given monitoring results/onsite inspection indicate soil-stabilizing techniques and drainages structures are functional and			•	•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	adequate to protect soil and watershed health. • Alternative D only: Surface disturbance necessary for development of federally leased coal (e.g., mine portals, roads and pads associated with vent holes, methane capture, etc.). Professionally engineered design, construction, maintenance, and reclamation would be required to mitigate to the fullest extent practicable all potential resource damage associated with the proposed action. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary because accelerated erosion from soils on steep slopes in the GJFO can be a major contributor of nonpoint source pollution in rivers and streams.				
	Vegetation				
NSO-2 *(ROWA)* **Streams/ Springs Possessing Lotic Riparian Characteristics.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within a minimum distance of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage). Where the riparian corridor width is greater than 100 meters (328 feet) from bank-full, prohibit surface occupancy and use and surface-disturbing activities within the riparian zone. **PURPOSE:** To protect water quality and aquatic values and prevent channel degradation, as riparian corridors/flood-prone areas are lands adjacent to waterbodies where activities on land are likely to affect water quality. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions, which are subject to CSU (site-specific relocation) stipulations, are as follows: • Necessary site restoration and management as dictated by initial analysis or later evaluation/monitoring. • Essential stream crossings associated with linear transportation, and utility crossings. **MODIFICATION:** Standard modifications apply (Section B.2).		•	•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	WAIVER: Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to maintain the natural hydrologic function and condition of mountain and rangeland stream systems. Properly functioning stream channels, stream banks, and floodplains (including the riparian zone) transport and store sediment at a rate which is in balance with each system's typical flow regime. Any alteration of this system can create an imbalance between sediment supply and flow, resulting in accelerated erosion, decreased water quality, and degraded habitat conditions and for special status aquatic wildlife. This stipulation is also essential to protect fish bearing streams in the GJFO.				
NSO-4 *(ROWA)* **Lentic Riparian Areas (including springs, seeps, and fens).** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within a minimum distance of 100 meters (328 feet) from the edge of the riparian zone. **PURPOSE:** To protect water quality and aquatic values and prevent channel degradation. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary because surface disturbance within the minimum 100-meter (328-foot) buffer may impair proper function and condition of springs, seeps, and fens. Source areas (for springs, seeps, and fens) are delicate and susceptible to any alteration of natural flow patterns, soil infiltration rates, or drainages within the contributing watershed. Changes to these variables may dewater lentic riparian areas, greatly impairing the system's ability to properly function.		•	•	
	Special Status Species				
NSO-11 *(ROWA)* **Conservation Populations of Cutthroat**	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within 100 meters (328 feet) from edge of ordinary high-water mark (bank-full stage) of streams containing genetically pure populations of cutthroat trout. Where the riparian corridor width is greater than 100 meters				•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
Trout. 3,600 acres ***All Surface-disturbing Activities***	(328 feet) from stream edge, prohibit surface occupancy and use and surface-disturbing activities within the riparian zone. **PURPOSE:** To protect conservation and core conservation populations of cutthroat trout. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, in-channel restoration or enhancement work designed to improve stream habitat conditions, riparian plantings, and temporary disturbances of less than 0.1 acre where BMPs are applied. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** Streams with conservation and core conservation populations of cutthroat trout are of the highest priority to BLM, USFWS, and CPW. The 100-meter (328-foot) buffer adequately protects fish habitat values because many of the perennial streams are within narrow canyons and steep slopes so the 100-meter (328-foot) buffer covers most of the key habitat for protecting these species.				
NSO-1 *(ROWA)* **Major River Corridors.** 11,800 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within stream channels, stream banks, and the area 402 meters (0.25-mile) either side of the ordinary high-water mark (bank-full stage) or within 100 meters (328 feet) of the 100-year floodplain (whichever area is greatest) of the Colorado, Gunnison, and Dolores Rivers. **PURPOSE:** To protect these riverine and adjacent areas that provide: a) special status fish and wildlife species habitat: b) important riparian values: c) water quality/filtering values: d) waterfowl and shorebird production values: e) valuable amphibian habitat: and f) high scenic and recreation values of the three major rivers (Colorado, Gunnison, and Dolores). **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions, which are subject to CSU (site-specific relocation) stipulations, are as follows: • Essential future actions in which implementation of a professionally engineered design, construction, maintenance,			•	•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	and reclamation plan can mitigate to the fullest extent practicable all potential resource damage associated with the proposed action; • New trail construction resulting in a disturbance corridor less than or equal to 1.2 meters (48 inches) wide open to nonmotorized use. Trials would be constructed per BLM minimum design standards; and • Section 7 consultation with USFWS on threatened or endangered species and/or their critical habitat has been completed. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is required to minimize potential deterioration of water quality, high scenic and recreation values, maintain natural hydrologic function and condition of stream channels, banks, floodplains, and riparian communities, and preserve wildlife habitat including designated critical habitat for federally listed fish species. The buffers are sized to accommodate the rivers' larger floodplains and wider riparian zones.				
HYDROLOGY RIVER NSO CO ***All Surface-disturbing Activities***	**STIPULATION:** No surface occupancy or use is allowed within 400 meters (1312 feet) of the ordinary high-water mark (bank-full stage) or within 100 meters (328 feet) of the 100-year floodplain (whichever area is greatest) on the following major river: <NAME> **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To protect rivers and adjacent aquatic habitat that provide: a) *special status* or *critical* fish and wildlife species habitat: b) important riparian values: c) water quality/filtering values: d) waterfowl and shorebird production values: e) valuable amphibian habitat: f) 100-year floodplain, and g) high scenic and recreation values of major rivers. Minimizing potential deterioration of water quality, high scenic and recreation values, maintain natural		•		

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	hydrologic function and condition of stream channels, banks, floodplains, and riparian communities, and preserve wildlife habitat including designated critical habitat for federally listed fish species. The buffers are sized to accommodate the rivers' larger floodplains and wider riparian zones. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is required to minimize potential deterioration of water quality, high scenic and recreation values, maintain natural hydrologic function and condition of stream channels, banks, floodplains, and riparian communities, and preserve wildlife habitat including designated critical habitat for federally listed fish species. The buffers are sized to accommodate the rivers' larger floodplains and wider riparian zones.				
NSO-2 *(ROWA)* **Streams/ Springs Possessing Lotic Riparian Characteristics.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within a minimum distance of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage). Where the riparian corridor width is greater than 100 meters (328 feet) from bank-full, prohibit surface occupancy and use and surface-disturbing activities within the riparian zone. **PURPOSE:** To protect water quality and aquatic values and prevent channel degradation, as riparian corridors/flood-prone areas are lands adjacent to waterbodies where activities on land are likely to affect water quality. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions, which are subject to CSU (site-specific relocation) stipulations, are as follows: • Necessary site restoration and management as dictated by initial analysis or later evaluation/monitoring. • Essential stream crossings associated with linear transportation, and utility crossings.		•	•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	MODIFICATION: Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to maintain the natural hydrologic function and condition of mountain and rangeland stream systems. Properly functioning stream channels, stream banks, and floodplains (including the riparian zone) transport and store sediment at a rate which is in balance with each system's typical flow regime. Any alteration of this system can create an imbalance between sediment supply and flow, resulting in accelerated erosion, decreased water quality, and degraded habitat conditions and for special status aquatic wildlife. This stipulation is also essential to protect fish-bearing streams in the GJFO.				
NSO-1 (Partial ROWA) (BLM 1987) **No Surface Occupancy (ACECs: Badger Wash, Pyramid Rock, Unaweep Seep).** 1,400 acres ***Fluid Minerals Only***	**STIPULATION:** Prohibit surface occupancy and use (for fluid minerals only) in the following areas: • Hydrologic and sensitive plants study area in Badger Wash ACEC (700 acres) *(Exhibit GJ-1BA)*; • Pyramid Rock State Natural Area (500 acres) *(Exhibit GJ-1EF)*; and • Unaweep Seep State Natural Area and Research Natural Area (200 acres) *(Exhibit GJ-1EG)*. **PURPOSE:** Badger Wash ACEC: To protect sensitive plants. Pyramid Rock: To protect known threatened, proposed, candidate, and sensitive plant species. Unaweep Seep: To protect sensitive plants. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2).	•			

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
NSO-12 *(Partial ROWA)* **ACECs.** *Alternative B:* 34,600 acres *Alternative C:* 38,200 acres *Alternative D:* 3,600 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities in the following ACECs to protect threatened, proposed, candidate, and sensitive species: <u>Alternative B:</u> • Atwell Gulch (2,900 acres); • Badger Wash (2,200 acres); • Pyramid Rock (1,300 acres); • South Shale Ridge (28,200 acres); and • Unaweep Seep (85 acres). <u>Alternative C:</u> • Atwell Gulch (6,100 acres); • Badger Wash (2,200 acres); • Plateau Creek (220 acres); • Pyramid Rock (1,300 acres); • South Shale Ridge (28,200 acres); and • Unaweep Seep (85 acres). <u>Alternative D:</u> • Badger Wash (2,200 acres); • Pyramid Rock (1,300 acres); and • Unaweep Seep (80 acres). **PURPOSE:** • Atwell Gulch: To protect threatened and sensitive plants. • Badger Wash: To protect sensitive plants. • Plateau Creek: To protect sensitive fish species. • Pyramid Rock: To protect known threatened, proposed, and sensitive plants. • South Shale Ridge: To protect threatened, proposed, and sensitive plants. • Unaweep Seep: To protect sensitive plants and Great Basin Silverspot Butterfly habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** This stipulation may be modified to include species listed as threatened, endangered, proposed, candidate, or sensitive in the future. This stipulation may also be modified to account for the change in status of species protected in this		•	•	•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	stipulation. **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect critical habitat for threatened, proposed, and sensitive plants.				
NSO-13 *(ROWA)* **Current and Historically Occupied Habitat and Critical Habitat of Threatened, Endangered, Proposed, and Candidate Plant and Animal Species.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit certain surface uses, as specified below, to protect threatened, endangered, proposed, and candidate plants and animals from indirect impacts, loss of immediately adjacent suitable habitat, or impacts to primary constituent elements of critical habitat as designated by USFWS. Maintain existing buffer distances where pre-existing disturbance exists, and reduce redundancies in roads to minimize fragmentation, and minimize direct impacts from motorized and mechanized users of roads, routes and trails. In undisturbed environments and ACECs, prohibit new disturbance within 200 meters (656 feet) of current and historically occupied and suitable habitat. This stipulation includes emergency closures of roads where damage to T&E habitat has occurred. **PURPOSE:** To protect threatened, endangered, proposed, and candidate species from indirect impacts or loss of immediately adjacent suitable habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the NSO may be altered if all of the following conditions are met: 1. Section 7 consultation with USFWS on threatened or endangered species has been completed; 2. Valid current surveys for protected species have been completed and submitted; 3. Mitigation has been applied to avoid adverse impacts to protected species and the proponent will submit monitoring reports; and 4. The proposed disturbance would occur in unsuitable habitat. Other surface-disturbing activities may be allowed in suitable habitat if conditions 1 through 3 above are met, and the purpose or the result of the activity would improve habitat conditions		•	•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	for the protected species. Allow occupancy within 200 meters (656 feet) when terrain and topography provide adequate protections **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER**: Standard waivers apply (Section B.2). **JUSTIFICATION**: This stipulation is necessary to protect threatened, endangered, proposed, and candidate species and ensure the preservation of their habitat (including plant pollinator habitat).				
NSO-14 *(ROWA)* **Currently Occupied Habitat of Threatened, Endangered, Proposed, and Candidate Species.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities to protect threatened, endangered, proposed, and candidate plants and animals from indirect impacts or loss of immediately adjacent suitable habitat. Maintain existing buffer distances where pre-existing disturbance exists. In undisturbed environments and ACECs, prohibit new disturbance within 200 meters (656 feet) of habitat. **PURPOSE:** To protect threatened, endangered, proposed, and candidate species from indirect impacts or loss of immediately adjacent suitable habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the NSO may be altered if all of the following conditions are met: 1. Section 7 consultation with USFWS on threatened or endangered species has been completed; 2. Valid current surveys for protected species have been completed; 3. Mitigation has been applied to avoid adverse impacts to protected species; and 4. The proposed disturbance would occur in unsuitable habitat. Other surface-disturbing activities may be allowed in suitable habitat if conditions 1 through 3 above are met, and the purpose or the result of the activity would improve habitat conditions for the protected species.				•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	MODIFICATION: Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to provide minimal protection for occurrences of threatened, endangered, proposed, and candidate species.				
NSO-15 *(ROWA)* **BLM Sensitive Plant Species' Occupied Habitat.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within 100 meters (328 feet) of BLM sensitive plant species' occupied habitat. In addition, relocation of operations by more than 200 meters (656 feet) may be required. **PURPOSE:** To reduce or eliminate threats to BLM sensitive plant species to minimize the likelihood and need for listing of these species under the Endangered Species Act of 1973. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions may be granted for activities where no other feasible alternatives are available and losses of population numbers comprise less than five percent of total population present in the action area. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to guard against BLM-permitted activities resulting in the listing of any species on the State Director's Sensitive Species List. This stipulation is based on guidance from the USFWS and BLM (USFWS and BLM 2008).			•	
NSO-16 *(ROWA)* **Osprey Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities (beyond that which historically occurred in the area prior to nest establishment) within 402 meters (0.25-mile) of active osprey nest sites. **PURPOSE:** To protect osprey habitat and nest sites. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the NSO area may be altered depending on the status of the nest site or the geographical relationship of topographic			•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect osprey nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).				
NSO-17 *(ROWA)* **Ferruginous Hawk Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities (beyond that which historically occurred in the area prior to nest establishment) within 805 meters (0.5-mile) of active ferruginous hawk nest sites and associated alternate nests. **PURPOSE:** To protect ferruginous hawk nesting habitat **EXCEPTION:** Standard exceptions apply (Section B.2). The NSO area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect ferruginous hawk nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).			•	
NSO-18 *(ROWA)* **Red-tailed Hawk Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities (beyond that which historically occurred in the area prior to nest establishment) within 531 meters (0.33-mile) of active red-tailed hawk nest sites and associated alternate nests. **PURPOSE:** To protect red-tailed hawk nesting habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the NSO area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site.			•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	MODIFICATION: Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect red-tailed hawk nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).				
NSO-19 *(ROWA)* **Swainson's Hawk Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities (beyond that which historically occurred in the area prior to nest establishment) within 402 meters (0.25-mile) of active Swainson's hawk nest sites and associated alternate nests. **PURPOSE:** To protect Swainson's hawk nesting habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the NSO area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect Swainson's hawk nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).			•	
NSO-20 *(ROWA)* **Peregrine Falcon Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities (beyond that which historically occurred in the area prior to nest establishment) within 805 meters (0.5-mile) of active peregrine falcon nest sites. **PURPOSE:** To protect peregrine falcon nesting habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the NSO area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2).			•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative			
		A	B	C	D
	JUSTIFICATION: This stipulation is necessary to protect peregrine falcon nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).				
NSO-21 *(ROWA)* **Prairie Falcon Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities (beyond that which historically occurred in the area prior to nest establishment) within 0.5-mile of active prairie falcon nest sites. **PURPOSE:** To protect prairie falcon nesting habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the NSO area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect prairie falcon nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).			•	
NSO-22 *(ROWA)* **Other Raptor Species (accipiters, falcons [except kestrel], buteos, and owls).** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within 201 meters (0.125-mile) of an active nest site of all accipiters, falcons (except kestrel), buteos, and owls not listed in other NSO stipulations. Raptors that are listed and protected by the Endangered Species Act of 1973 and the Bald and Golden Eagle Protection Act are addressed separately. **PURPOSE:** To protect raptor nesting habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the NSO area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2).			•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	JUSTIFICATION: This stipulation is necessary to protect raptor nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2002).				
NSO-23 *(ROWA)* **Golden Eagle Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities (beyond that which historically occurred in the area prior to nest establishment) within 402 meters (0.25-mile) of active golden eagle nest sites and associated alternate nests. **PURPOSE:** To protect golden eagle nesting habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the NSO area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect golden eagle nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).		•	•	•
NSO-24 *(ROWA)* **Bald Eagle Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities (beyond that which historically occurred in the area prior to nest establishment) within 402 meters (0.25-mile) of active bald eagle nests. **PURPOSE:** To protect bald eagle nesting habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the NSO area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect bald eagle nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).		•	•	•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] Protected Resource Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
NSO-25 *(ROWA)* **Sage-grouse Leks, Nesting, and Early Brood-rearing Habitat (4 miles).** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within 6.4 kilometers (4 miles) of an active lek or within sage-grouse nesting and early brood-rearing habitat. **PURPOSE:** To protect breeding, nesting, and brood-rearing habitat for the Gunnison and greater sage-grouse. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the NSO area may be altered depending upon the active status of the lek or the geographical relationship of topographical barriers and vegetation to the lek site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to minimize impacts on greater and Gunnison sage-grouse. The four mile buffer is consistent with current scientific research recommendations (The Parachute-Piceance-Roan (PPR) Greater Sage-Grouse Work Group 2008).		•	•	
NSO-26 *(ROWA)* **Canyon Treefrog, Midget Faded Rattlesnake, Northern Leopard Frog, Great Basin Spadefoot, Long-nosed Leopard Lizard, Boreal Toad (no buffer).** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within all identified canyon treefrog, northern leopard frog, midget faded rattlesnake, Great Basin spadefoot, long-nosed leopard lizard (*Gambelia wislizenii*), and boreal toad breeding and denning sites. **PURPOSE:** To protect breeding habitat for canyon treefrog, northern leopard frog, midget faded rattlesnake, Great Basin spadefoot, long-nosed leopard lizard, and boreal toad. Note: no midget faded rattlesnake or boreal toad breeding locations are currently identified in the GJFO. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect important breeding habitat for these species. The Northern Leopard Frog has been petitioned for listing under the Endangered Species Act of 1973.		•		•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] Protected Resource Acres/Miles Affected	Stipulation Description	Alternative			
		A	B	C	D
NSO-27 *(ROWA)* **Canyon Treefrog, Midget Faded Rattlesnake, Northern Leopard Frog, Great Basin Spadefoot, Boreal Toad (0.5-mile).** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within 805 meters (0.5-mile) of all identified canyon treefrog, northern leopard frog, midget faded rattlesnake, Great Basin spadefoot, and boreal toad breeding and denning sites. **PURPOSE:** To protect breeding habitat for canyon treefrog, northern leopard frog, midget faded rattlesnake, Great Basin spadefoot and boreal toad. Note: no midget faded rattlesnake or boreal toad breeding locations are currently identified in the GJFO. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect important breeding habitat for these species. The Northern Leopard Frog has been petitioned for listing under the Endangered Species Act of 1973. The larger buffer would ensure potential impacts would be minimized.			•	
NSO-28 *(ROWA)* **Special Status Bat Species' Roost Sites and Winter Hibernacula.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within a 402-meter (0.25-mile) radius of the entrance of maternity roosts or hibernacula of BLM sensitive bat species, as mapped in the RMP, BLM's GIS database, or other maps provided by local, state, federal, or tribal agencies that are analyzed and accepted by the BLM. **PURPOSE:** To protect sensitive bat species' maternity roosts and hibernacula. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to minimize impacts on important bat areas.			•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
WILDLIFE BAT NSO CO ***All Surface-disturbing Activities***	**STIPULATION:** No surface occupancy or use is allowed within a 402 meter (0.25 mile) radius of the entrance of maternity roosts or hibernacula of BLM sensitive bat species, as mapped in the Resource Management Plan, BLM's GIS database or other maps provided by local, state, federal or tribal agencies that are analyzed and accepted by the BLM. <SPECIES> **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To protect sensitive bat species' maternity roosts and hibernacula. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to minimize impacts on important bat areas.		•		
NSO-29 *(ROWA)* **Active Kit Fox Dens.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface-disturbing activities, and other intensive activities including but not limited to work-over rigs and permitted recreational events within 200 meters (656 feet) of active kit fox dens. **PURPOSE:** To protect breeding kit fox. Note there are currently no known breeding locations for kit fox in the GJFO. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to minimize disturbance to the kit fox, which have become increasingly rare in Colorado and appear to be significantly more susceptible to disturbance than other canids in the GJFO.			•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] Protected Resource Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
NSO-30 *(ROWA)* **Occupied Prairie Dog Towns (no buffer).** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities (beyond that which historically occurred in the area) within active white-tailed prairie dog towns. **PURPOSE:** To maintain or improve white-tailed prairie dog habitat and distribution. **EXCEPTION:** Standard exceptions apply (Section B.2). Additional exception criteria include activities that avoid the center of active towns while maintaining the integrity of the town's social structure. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect prairie dogs, a keystone species whose population has been declining across the western US.		•		
NSO-31 *(ROWA)* **Occupied Prairie Dog Towns (46 meters).** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities (beyond that which historically occurred in the area) within 46 meters (150 feet) of active white-tailed prairie dog towns. **PURPOSE:** To maintain or improve white-tailed prairie dog habitat and distribution. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the NSO area may be altered depending upon the type of activity and existing disturbance within 46 meters (150 feet) of the white-tailed prairie dog town. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation provides additional protection for prairie dogs, a keystone species whose population has been declining across the western US.			•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
	Fish and Wildlife				
NSO-32 *(ROWA)* **Research Sites.** 130 acres ***All Surface-disturbing Activities***	**STIPULATION**: Prohibit surface occupancy and use and surface-disturbing activities in approved research sites including, but not limited to, the Ant Research Area (16 Road) and the Owl Banding Station (south of DeBeque). **PURPOSE:** To maintain the integrity of ongoing research stations. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions would be granted for work to be done in the research areas consistent with the goals and objectives of the research being conducted on the site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect long-term, ongoing research sites within the GJFO. If research sites are impacted, they incur the potential for research findings to be negatively affected.		•	•	•
NSO-12 *(Partial ROWA)* **ACECs.** *Alternative B:* 74,800 acres *Alternative C:* 146,600 acres *Alternative D:* 26,300 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities in the following ACECs to protect threatened, proposed, candidate, and sensitive species and habitat: <u>Alternative B:</u> • Atwell Gulch (2,900 acres); • Indian Creek (2,300 acres); • Palisade (32,200 acres); • Rough Canyon (2,800 acres); • Sinbad Valley (6,400 acres); and • South Shale Ridge (28,200 acres). <u>Alternative C:</u> • Atwell Gulch (6,100 acres); • Colorado River Riparian (880 acres); • Glade Park-Pinyon Mesa (27,200 acres); • Indian Creek (2,300 acres); • Palisade (32,200 acres);		•	•	•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	• Plateau Creek (220 acres); • Prairie Canyon (6,900 acres); • Roan and Carr Creeks (33,600 acres); • Rough Canyon (2,800 acres); • Sinbad Valley (6,400 acres); and • South Shale Ridge (28,200 acres). Alternative D: • Palisade (23,600 acres); and • Rough Canyon (2,700 acres). **PURPOSE:** • Atwell Gulch: To protect wildlife habitat. • Colorado River Riparian: To protect fisheries values. • Glade Park-Pinyon Mesa: To protect occupied Gunnison sage-grouse habitat. • Indian Creek: To protect wildlife values. • The Palisade: To protect special status wildlife. • Plateau Creek: To protect fisheries values. • Prairie Canyon: To protect wildlife habitat. • Roan and Carr Creeks: To protect core conservation populations of cutthroat trout. • Rough Canyon: To protect wildlife habitat. • Sinbad Valley: To protect wildlife resources. • South Shale Ridge: To protect wildlife habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** This stipulation may be modified to include species listed as threatened, endangered, proposed, candidate, or sensitive in the future. This stipulation may also be modified to account for the change in status of species protected in this stipulation. **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect critical habitat for threatened, proposed, and sensitive plants.				

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
RECREATION PARKS NSO CO ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use within the boundaries of the following county parks, state parks, state wildlife areas, federal wildlife refuges, and/or National Park Service units: • Horsethief Canyon State Wildlife Area (1,400 acres) • Jerry Creek Reservoir State Wildlife Area (870 acres) • Plateau Creek State Wildlife Area (1,400 acres) • Highline State Park (350 acres) • Vega State Park (2,000 acres) **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To protect the resources of wildlife refuges and park units, such as county parks, state parks, and wildlife areas, and federal parks and wildlife refuges. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to prevent placement of facilities within the state wildlife areas, where BLM manages the fluid mineral rights.		•		
NSO-1 (Exhibit GJ-1DE) (BLM 1987) **No Surface Occupancy (Wildlife Habitat in Rough Canyon).** 2,600 acres ***Fluid Minerals Only***	**STIPULATION:** Prohibit occupancy or other activity (fluid minerals only) on the following portions of this lease: <LEGAL_DESCRIPTIONS> **PURPOSE:** To protect wildlife habitat in Rough Canyon. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lease can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified. If this stipulation is waived or reduced in scope, any of the other attached stipulations (if any) may impact operations on this lease.	•			

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
NSO-1 (ROWA) (BLM 1987) **No Surface Occupancy (State Wildlife Areas).** ***Fluid Minerals Only***	**STIPULATION:** Prohibit occupancy and other activities (fluid minerals only) on the following portions of this lease: <LEGAL_DESCRIPTIONS> • Highline Reservoir recreation site (1,800 acres) *(Exhibit GJ-11E)* • Horsethief Canyon (1,400 acres) *(Exhibit GJ-1DD)* • Jerry Creek Reservoir (7,200 acres) *(Exhibit GJ-6BD)* • Vega Reservoir recreation site (4,000 acres) *(Exhibit GJ-11D)* **PURPOSE:** To protect wildlife habitat, reservoirs, and recreation facilities. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2).	•			
NSO-1 (Exhibit GJ-1DC) (BLM 1987) **No Surface Occupancy (Elk Calving Sites).** ***Fluid Minerals Only***	**STIPULATION:** Prohibit occupancy or other activity (fluid minerals only) on the following portions of this lease: <LEGAL_DESCRIPTIONS> **PURPOSE:** To protect elk calving sites. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lease can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified. If this stipulation is waived or reduced in scope, any of the other attached stipulations (if any) may impact operations on this lease.	•			
NSO-34 *(ROWA)* **Elk Production Area.** *BLM surface/ federal minerals:* 13,100 acres *Private or State*	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities in elk production areas year-round. **PURPOSE:** To protect elk production areas. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard modifications apply (Section B.2).		•	•	•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
surface/federal minerals: 25,100 acres ***All Surface-disturbing Activities***	**JUSTIFICATION:** This stipulation is necessary to reduce surface disturbance and habitat fragmentation on BLM lands that CPW has identified as elk calving habitat.				
WILDLIFE HABITAT NSO CO ***All Surface-disturbing Activities***	**STIPULATION:** No surface occupancy or use is allowed within the following wildlife emphasis or priority areas, as identified in the Resource Management Plan: • Blue Mesa (wintering habitat for mule deer and elk) (9,300 acres); • Bull Hill (wintering habitat for mule deer and elk) (4,800 acres); • A portion of East Salt Creek (wintering habitat for mule deer and elk) (4,500 acres); • A portion of Prairie Canyon (pronghorn antelope habitat) (5,600 acres); • Sunnyside (wintering and migratory habitat for bighorn sheep, mule deer, elk, and Greater Sage-Grouse) (14,500 acres); and • Timber Ridge (habitat for mule deer, elk, and Gunnison Sage-Grouse) (11,800 acres). **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To protect lands identified in the Resource Management Plan as unique and important wildlife habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect the highest priority wildlife habitat for deer, elk, antelope, bighorn sheep, and sage-grouse. Wildlife emphasis areas were identified in coordination with CPW biologists.		•		

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
NSO-35 *(ROWA)* **Wildlife Emphasis Areas.** 57,800 acres ***All Surface-disturbing Activities***	**STIPULATION**: Prohibit surface occupancy and use and surface-disturbing activities within the following wildlife emphasis areas: • Beehive (wintering and migratory habitat for mule deer and elk) (4,700 acres); • Blue Mesa (wintering habitat for mule deer and elk) (9,300 acres); • Bull Hill (wintering habitat for mule deer and elk) (4,800 acres); • Casto (wintering habitat for mule deer and elk) (4,200 acres); • A portion of East Salt Creek (wintering habitat for mule deer and elk) (4,400 acres); • A portion of Prairie Canyon (pronghorn antelope habitat) (5,600 acres); • A portion of Rapid Creek (wintering habitat for mule deer) (1,700 acres); and • Sunnyside (wintering and migratory habitat for bighorn sheep, mule deer, elk, and sage-grouse) (11,300 acres); and • Timber Ridge (habitat for mule deer, elk, and sage-grouse) (11,800 acres). **PURPOSE:** To protect wildlife emphasis areas for the species noted above. Wildlife emphasis areas are areas of the highest value/top-ranked wildlife habitat (by BLM and CPW) for multiple species. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions would be granted for range improvement projects designed to improve livestock grazing distribution. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect the highest priority wildlife habitat for deer, elk, antelope, bighorn sheep, and sage-grouse. Wildlife emphasis areas were identified in coordination with CPW biologists.			•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	Wild Horses				
NSO-36 *(ROWA)* Little Book Cliffs Wild Horse Range. 35,200 acres ***All Surface-disturbing Activities***	**STIPULATION**: Prohibit surface occupancy and use and surface-disturbing activities on lands within the LBCWHR. **PURPOSE:** To reduce impacts on wild horses in the LBCWHR. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions would be granted for gather activities, vegetative treatments, water hauling or the development of springs, catchments, reservoirs, storage tanks, exclosures or fences designed to improve wild horse forage, distribution, containment, or overall management. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard modifications apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to mitigate impacts that could interfere with the protection and management of wild horses in the LBCWHR.		•	•	
	Cultural Resources				
NSO-37 *(ROWA)* **Allocation to Conservation Use Category.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities, including archaeological excavation, within 100 meters (328 feet) around eligible sites allocated to Conservation Use. **PURPOSE:** To protect unique scientific information in sites allocated to Conservation Use. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** The BLM's Authorizing Officer may modify the site-protection boundary on a case-by-case basis, taking into account topographical barriers, the design of the proposed action, and the characteristics of the cultural resource site and/or area. **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to preserve sites allocated to Conservation Use, where mitigation through data recovery is not an option. This stipulation allows the BLM	•	•	•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	to mitigate impacts that can cause significant degradation to the site integrity criteria that are applied in the designation of the cultural resource as eligible or potentially eligible for nomination to the NRHP *(36 CFR part 800.5(a)(1))*.				
NSO-38 *(ROWA)* **Allocation to Traditional Use Category.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within 200 meters (656 feet), from the boundary of the following known eligible or potentially eligible sites allocated to Traditional Use. In addition, consider visual impacts that projects may have on sites allocated to this use, and apply appropriate mitigation, which may include redesign. **PURPOSE:** To protect values that contribute to sites allocated to Traditional Use. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** The BLM's Authorizing Officer may modify the site-protection boundary on a case-by-case basis after completion and documentation of Native American Consultation, taking into account topographical barriers, the design of the proposed action, and the characteristics of the cultural resource site and/or area. **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to address indirect or secondary impacts that can occur to cultural resources that have been identified by the Ute Indian Tribe and Ute Mountain Ute Indian Tribe. This stipulation buffer has been established through consultation conducted with the Ute Indian Tribe for the Orchard GAP (shared CRVFO-GJFO MDP) and during the RMP Ute Ethnohistory project with the Ute Indian Tribe and the Ute Mountain Ute Tribe. Impacts to Traditional Use sites are typically not mitigated through data recovery. This stipulation allows the BLM to mitigate impacts that can cause significant degradation to the site integrity criteria that are applied in the designation of the cultural resource as eligible or potentially eligible for nomination to the NRHP *(36 CFR part 800.5(a)(1))*.	•	•	•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
NSO-1 (BLM 1987) **No Surface Occupancy (Cultural Resources).** 4,600 acres ***Fluid Minerals Only***	**STIPULATION:** Prohibit occupancy or other activity (fluid minerals only) on the following portions of this lease: <LEGAL_DESCRIPTIONS> • Site 5ME1358 *(Exhibit GJ-1HF)* (170 acres); • Indian Creek *(Exhibit GJ-1HA)* (1,400 acres); • Rough Canyon *(Exhibit GJ-1HB)* (2,600 acres); and • Ladder Springs *(Exhibit GJ-1HG)* (460 acres). **PURPOSE:** To protect unique, significant, and fragile cultural resources. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified.	•			
NSO-39 *(ROWA Alternatives B and C)* **Cultural Resources (Indian Creek)**. 1,700 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities in the following areas: • West Indian Creek (520 acres); and • East Indian Creek (1,200 acres). **PURPOSE:** To protect cultural resources. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard modifications apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary because data recovery to mitigate adverse effects (for the purposes of compliance with Section 106 of the NHPA) is not an objective for these sites. This stipulation also preserves the site(s) within these areas for long term research projects.		•	•	•
	Visual Resources				
NSO-1 (BLM 1987) **No Surface Occupancy**	**STIPULATION:** Prohibit occupancy or other activity (fluid minerals only) on the following portions of this lease: <LEGAL_DESCRIPTIONS>. • Juanita Arch (330 acres) *(Exhibit GJ-1GA)*;	•			

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
(Visual Resources). 189,900 acres ***Fluid Minerals Only***	• The Goblins (120 acres) *(Exhibit GJ-1GB)*; • Dolores River corridor (55,200 acres) *(Exhibit GJ-1GE)*; • Gunnison River corridor (22,000 acres) *(Exhibit GJ-1GF)*; • The Book Cliffs (15,300 acres) *(Exhibit GJ-1GH)*; • Bangs Canyon (39,900 acres) *(Exhibit GJ-1GJ)*; • Sinbad Cliffs (7,400 acres) *(Exhibit GJ-1GK)*; • Granite Creek Canyon/Cliffs (14,200 acres) *(Exhibit GJ-1GL)*; • Unaweep Canyon (54,000 acres) *(Exhibit GJ-1GM)*; • Hunter/Garvey Cliffs (24,400 acres) *(Exhibit GJ-1GN)*; and • Vega State Recreation Area (7,100 acres) *(Exhibit GJ-1GO)*. **PURPOSE:** To protect visual resources. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lease can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified. If this stipulation is waived or reduced in scope, any of the other attached stipulations (if any) may impact operations on this lease.				
VISUAL CLASS I NSO CO ***All Surface-Disturbing Activities*** 98,700 acres	**STIPULATION:** No surface occupancy or use is allowed in VRM Objective Class I areas and the Goblins **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To protect the quality of the scenic (visual) values. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard modifications apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to ensure the protection of vital visual features in the GJFO landscape.		•		
NSO-40 **VRM (Class I and the**	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within the following areas: • All VRM Class I areas; and			•	•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
Goblins). *Alternative C:* 101,000 acres *Alternative D:* 9,500 acres ***All Surface-disturbing Activities***	• The Goblins. **PURPOSE:** To protect the quality of the scenic (visual) values. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to ensure the protection of vital visual features in the GJFO landscape.				
	Lands Managed for Wilderness Characteristics				
NSO-41 **Lands Managed for Wilderness Characteristics.** 171,000 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities on identified lands managed to protect inventoried wilderness characteristics: • Bangs Canyon (20,400 acres); • East Demaree Canyon (4,800 acres); • East Salt Creek (17,000 acres) • Hunter Canyon (32,000 acres); • Kings Canyon (9,600 acres); • Lumsden Canyon (10,100 acres); • Maverick (20,400 acres); • South Shale Ridge (27,500 acres); • Spink Canyon (13,100 acres); • Spring Canyon (8,800 acres); • Unaweep Canyon (7,200 acres); and • West Creek (adjacent) (110 acres). **PURPOSE:** To protect inventoried wilderness characteristics and their locally, regionally, or nationally significant recreational, social, economic, and environmental values. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to ensure lands with identified wilderness characteristics remain in their current undeveloped state.			•	

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
LANDS WITH WILDERNESS CHARACTERISTICS NSO CO. 44,100 acres ***All Surface-disturbing Activities***	**STIPULATION:** No surface occupancy or use is allowed on identified lands being managed to protect inventoried wilderness characteristics, in accordance with the Resource Management Plan: • Bangs Canyon (19,600 acres); • Maverick (17,800 acres); • Unaweep Canyon (6,700 acres) **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To protect inventoried wilderness characteristics and their locally, regionally, or nationally significant recreational, social, economic, and environmental values. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard modifications apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to ensure lands with identified wilderness characteristics remain in their current undeveloped state.		•		
	Recreation and Visitor Services				
NSO-1 (ROWA) (BLM 1987) **No Surface Occupancy (Recreational Resources).** 114,000 acres ***Fluid Minerals Only***	**STIPULATION:** Prohibit occupancy or other activity (fluid minerals only) on the following portions of this lease: <LEGAL_DESCRIPTIONS>. • The Palisade ONA (860 acres) *(Exhibit GJ-11A)*; • Established recreation sites (200 acres) *(Exhibit GJ-11B)*; • Island Acres (560 acres) *(Exhibit GJ-11C)*; • Vega State Recreation Area (4,000 acres) *(Exhibit GJ-11D)*; • Highline Reservoir Recreation Area (1,7800 acres) *(Exhibit GJ-11E)*; • Rough Canyon ACEC (2,600 acres) *(Exhibit GJ-11F)*; • Hunter/Garvey backcountry (23,000 acres) *(Exhibit GJ-11G)*; • Granite Creek Canyons/Cliffs (14,000 acres) *(Exhibit GJ-11H)*; • Bangs Canyon (36,900 acres) *(Exhibit GJ-11I)*; • Dolores River (8,400 acres) *(Exhibit GJ-11K)*; and	•			

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	• Gunnison River (21,500 acres) *(Exhibit GJ-11L)*. **PURPOSE:** To protect recreational resources. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lease can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified. If this stipulation is waived or reduced in scope, any of the other attached stipulations (if any) may impact operations on this lease.				
NSO-42 **Special Recreation Management Areas.** *Alternative C:* 17,300 acres *Alternative D:* 25,200 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within the following RMZs/SRMAs. Alternative C: • Bangs (17,300 acres) Alternative D: • Bangs (17,300 acres) • Castle Rock (4,400 acres) • Gunnison River Bluffs (800 acres) • Palisade Rims (2,700 acres) **PURPOSE:** To protect: specific recreation-tourism visitors and/or community customer markets to be served, and to maintain the specific setting character and/or service delivery system conditions that are essential to achievement of the experiences and benefits identified in management objectives for the SRMA. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard modifications apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect areas important to recreation users which may also include large facility investments. Protection of RMZs is necessary to meet desired recreation outcomes.			•	•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
RECREATION SRMA NSO CO ***All Surface-disturbing Activities*** 87,000 acres	**STIPULATION:** No surface occupancy or use is allowed within the following Special Recreation Management Areas (SRMAs) as identified in the Resource Management Plan: • Bangs; • Dolores River Canyon; • North Fruita Desert; and • Palisade Rim. **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To protect specific recreation-tourism visitors and/or community customer markets to be served, and maintain the specific setting character and/or service delivery system conditions that are essential to achievement of the experiences and benefits identified in management objectives for the SRMA. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect areas important to recreation users which may also include large facility investments. Protection of RMZs is necessary to meet desired recreation outcomes.		•		
RECREATION PARKS NSO CO ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use within the boundaries of the following county parks, state parks, state wildlife areas, federal wildlife refuges, and/or National Park Service units: • Horsethief Canyon State Wildlife Area (1,400 acres) • Jerry Creek Reservoir State Wildlife Area (870 acres) • Plateau Creek State Wildlife Area (1,400 acres) • Highline State Park (350 acres) • Vega State Park (2,000 acres) **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To protect the resources of wildlife refuges and		•		

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	park units, such as county parks, state parks, and wildlife areas, and federal parks and wildlife refuges. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to prevent placement of facilities within the state wildlife areas, where BLM manages the fluid mineral rights.				
	Fluid Minerals (Oil and Gas and Geothermal Resources)				
NSO-1 *(BLM 1987)* **No Surface Occupancy (State Wildlife Areas).** ***Fluid Minerals Only***	**STIPULATION:** Prohibit occupancy and other activities (fluid minerals only) on the following portions of this lease: <LEGAL_DESCRIPTIONS> • Highline Reservoir recreation site (1,788 acres) *(Exhibit GJ-11E)* • Horsethief Canyon (1,400 acres) *(Exhibit GJ-1DD)* • Jerry Creek Reservoir (7,200 acres) *(Exhibit GJ-6BD)* • Vega Reservoir recreation site (4,000 acres) *(Exhibit GJ-11D)* **PURPOSE:** To protect wildlife habitat, reservoirs, and recreation facilities. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2).	•			
RECREATION PARKS NSO CO ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use within the boundaries of the following county parks, state parks, state wildlife areas, federal wildlife refuges, and/or National Park Service units: • Horsethief Canyon State Wildlife Area (1,400 acres) • Jerry Creek Reservoir State Wildlife Area (870 acres) • Plateau Creek State Wildlife Area (1,400 acres) • Highline State Park (350 acres) • Vega State Park (2,000 acres)		•		

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	On the following lands: <LEGAL_DESCRIPTION>				
	PURPOSE: To protect the resources of wildlife refuges and park units, such as county parks, state parks, and wildlife areas, and federal parks and wildlife refuges.				
	EXCEPTION: Standard exceptions apply (Section B.2).				
	MODIFICATION: Standard modifications apply (Section B.2).				
	WAIVER: Standard waivers apply (Section B.2).				
	JUSTIFICATION: This stipulation is necessary to prevent placement of facilities within the state wildlife areas, where BLM manages the fluid mineral rights.				
	ACECs				
NSO-1 (Partial ROWA) (BLM 1987) **NSO-12** *(Partial ROWA)* **ACECs.** *Alternative A:* 28,800 acres *Alternative B:* 89,800 acres *Alternative C:* 168,000 acres *Alternative D:* 33,200 acres ***Alternative A: Fluid Minerals Only*** ***Alternatives B, C, and D: All Surface-***	**STIPULATION**: Prohibit surface occupancy and use (for fluid minerals only in Alternative A), and prohibit surface occupancy and use and surface-disturbing activities (Alternatives B, C, and D), within the following ACECs: Alternative A: • Badger Wash (hydrologic and sensitive plants study area) *(Exhibit GJ-1BA)* (1,900 acres); • Palisade *(Exhibit GJ-1IA)* (23,600 acres); • Pyramid Rock State Natural Area (550 acres) *(Exhibit GJ-1EF)*; • Rough Canyon *(Exhibit GJ-1EF)* (2,700 acres); and • Unaweep Seep *(Exhibit GJ-1EG)* (80 acres). Alternative B: • Atwell Gulch (2,900 acres); • Badger Wash (2,200 acres); • Dolores River Riparian (7,400 acres); • Indian Creek (2,300 acres); • Juanita Arch (1,600 acres); • Mt. Garfield (2,400 acres); • Palisade (32,200 acres); • Pyramid Rock (1,300 acres); • Rough Canyon (2,800 acres);	•	•	•	•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
disturbing Activities	• Sinbad Valley (6,400 acres); • South Shale Ridge (28,200 acres); and • Unaweep Seep (85 acres). <u>Alternative C:</u> • Atwell Gulch (6,100 acres); • Badger Wash (2,200 acres); • Colorado River Riparian (880 acres); • Coon Creek (110 acres); • Dolores River Riparian (7,400 acres); • Glade Park-Pinyon Mesa (27,200 acres); • Gunnison River Riparian (460 acres); • Hawxhurst Creek (860 acres); • Indian Creek (1,700 acres); • John Brown Canyon (1,400 acres); • Juanita Arch (1,600 acres); • Mt. Garfield (5,700 acres); • Nine-mill Hill Boulders (90 acres); • Palisade (32,200 acres); • Plateau Creek (220 acres); • Prairie Canyon (6,900 acres); • Pyramid Rock (1,300 acres); • Reeder Mesa (470 acres); • Roan and Carr Creeks (33,600 acres); • Rough Canyon (2,800 acres); • Sinbad Valley (6,400 acres); • South Shale Ridge (28,200 acres); and • Unaweep Seep (85 acres). <u>Alternative D:</u> • Badger Wash (2,200 acres); • Palisade (26,900 acres); • Pyramid Rock (1,300 acres); • Rough Canyon (2,700 acres); and • Unaweep Seep (80 acres). **PURPOSE:** To protect and prevent irreparable damage to resources described in the relevance and importance criteria for				

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	which the ACEC was established. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change, or if the lease can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified. If this stipulation is waived or reduced in scope, any of the other attached stipulations (if any) may impact operations on this lease. **JUSTIFICATION:** This stipulation is necessary to protect areas that contain highly important resources requiring special protections.				
	Wilderness Study Areas				
NSO-43 **Wilderness Study Areas.** 96,500 acres ***All Surface-disturbing Activities***	**STIPULATION**: Prohibit surface occupancy and use and surface-disturbing activities in WSAs in accordance with the Interim Management Policy for Lands Under Wilderness Review (BLM Manual H-8550-1) (BLM 1995c). • Demaree Canyon (22,700 acres); • Little Book Cliffs (29,300 acres); • The Palisade (26,700 acres); • Sewemup Mesa (17,800 acres). **PURPOSE:** To preserve wilderness characteristics in WSAs in accordance with non-impairment standards as defined by the Interim Management Policy for land under wilderness review (BLM Manual H-8550-1). **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to preserve wilderness characteristics in WSAs in accordance with non-impairment standards as defined by the Interim Management Policy for land under wilderness review (BLM Manual H-8550-1).	•	•	•	•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	Wild and Scenic Rivers				
NSO-44 *(ROWA)* **WSR Study Segments Classified as Wild.** 1,100 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within 402 meters (0.25-mile) of either side of the active river channel (bank-full stage): • North Fork West Creek. **PURPOSE:** To protect the outstanding remarkable values, water quality, and free-flowing nature and recommended classification of suitable segments. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to ensure WSR segments classified as Wild remain undeveloped and waters unpolluted.			•	
	National Trails				
NSO-45 *(ROWA)* **Old Spanish National Historic Trail (50 meters).** 1,000 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within 50 meters (164 feet) of the center line of the congressionally designated Old Spanish National Historic Trail. **PURPOSE:** To protect the physical evidence of the trail, associated cultural and historic resources, and integrity of the viewshed associated with the Old Spanish National Historic Trail. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions would be granted for actions not resulting in long-term adverse impacts to the trail. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect the cultural and historic resources along this congressionally designated historic trail.		•		•

Table B-5
No Surface Occupancy (NSO) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative			
		A	**B**	**C**	**D**
NSO-46 *(ROWA)* **Old Spanish National Historic Trail (0.5 mile).** 3,400 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within 805 meters (0.5-mile) of the center line of the congressionally designated Old Spanish National Historic Trail. **PURPOSE:** To protect the physical evidence of the trail, associated cultural and historic resources, and integrity of the viewshed associated with the Old Spanish National Historic Trail. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions would be granted for actions not resulting in long-term adverse impacts to the trail. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect to protect the cultural and historic resources along this congressionally designated historic trail.			•	

[1]Existing stipulations currently in effect in Alternative A, current management, are noted in italics and are from the current RMP (BLM 1987).

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] Protected Resource Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	Water Resources				
CSU-39 **Roan and Carr Creeks ACEC.** 33,600 acres ***All Surface-disturbing Activities***	**STIPULATION:** Special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required in the Roan and Carr Creeks ACEC (33,600 acres). **PURPOSE:** To protect and prevent irreparable damage to unique riparian habitats, genetically pure populations of cutthroat trout, and Greater Sage-Grouse habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect areas that contain highly important resources requiring special protections.		•		
CSU-1 *(ROWA)* **Major River Corridors.** 12,700 acres ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions from 402 to 805 meters (0.25- to 0.5-mile) landward from identified NSO buffer (402 meters [0.25-mile] from ordinary high water mark or within 100 meters [328 feet] of the 100-year floodplain, whichever is greatest) on either side of the Colorado, Gunnison, and Dolores Rivers for fluid mineral development. **PURPOSE:** To protect these riverine and adjacent areas that provide: a) special status fish and wildlife species habitat: b) important riparian values: c) water quality/filtering values: d) waterfowl and shorebird production values: e) valuable amphibian habitat: and f) high scenic and recreation values of the three major rivers (Colorado, Gunnison, and Dolores). **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions, which are subject to CSU (site-specific relocation) stipulations, are as follows: • Essential future actions in which implementation of a professionally engineered design, construction, maintenance, and reclamation plan can mitigate to the fullest extent practicable all potential resource damage associated with the proposed action.			•	

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	MODIFICATION: Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is required to minimize potential deterioration of water quality, high scenic and recreation values, maintain natural hydrologic function and condition of stream channels, banks, floodplains, and riparian communities, and preserve wildlife habitat including designated critical habitat for federally listed fish species. The buffers are sized to accommodate the rivers' larger floodplains and wider riparian zones.				
CSU-7 (ROWA) (BLM 1987) **Perennial Streams Water Quality.** ***Fluid Minerals Only***	**STIPULATION:** Limit surface-disturbing activities (for fluid minerals only) within 31 meters (100 feet) of perennial streams to essential roads and utility crossings. **PURPOSE:** To reduce impacts to water quality. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified.	•			
CSU-2 *(ROWA)* **Hydrologic Features/Riparian.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions within 152 meters (500 feet) from the edge of any hydrologic feature including perennial and intermittent streams, wetlands (including fens), lakes, springs, seeps, and riparian areas. **PURPOSE:** To protect water quality and aquatic values and prevent channel degradation, as Streamside Management Zones are lands adjacent to a waterbody where activities on land are likely to affect water quality. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect water quality, riparian and wildlife dependent habitats.			•	•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
CSU-3 *(ROWA)* **Definable Streams.** ***All Surface-disturbing Activities***	**STIPULATION:** Surface-disturbing actions within a minimum distance of 30 meters (98 feet) from the edge of the ordinary high-water mark (bank-full stage) should be avoided to the greatest extent practicable and disturbances would be subject to site specific relocation at the discretion of the BLM. **PURPOSE:** To protect watershed resource values and reduce non-point source pollutant contributions to the Colorado River system. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2) **JUSTIFICATION:** This stipulation is necessary to carefully plan and appropriately mitigate disturbances near surface water drainages in order to reduce non-point source pollutant contributions from BLM lands to the Colorado River system.		•		
CSU-6 *(BLM 1987)* **Watersheds.** 10,600 acres ***Fluid Minerals Only***	**STIPULATION:** Require that all lease operations (for fluid minerals only) avoid interference with watershed resource values located on the following portions of this lease: • Jerry Creek Reservoirs (5,400 acres) *(Exhibit GJ-6BD)* and • The Palisade municipal watershed (5,200 acres) *(Exhibit GJ-6BB)*. **PURPOSE:** To protect watershed resource values. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** This may include the relocation of proposed roads, drilling sites, and other facilities, or the application of appropriate mitigating measures. **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified.	•			
CSU-4 *(ROWA)* **Collbran and Mesa/ Powderhorn**	**STIPULATION:** Require that all ground disturbances within source water protection areas and the Jerry Creek watershed avoid interference with watershed resource values.		•		•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
Source Water Protection Areas, and Jerry Creek Watershed. *BLM surface/ federal minerals:* 148,200 acres *Private or State surface/federal minerals*: 30,300 acres ***All Surface-disturbing Activities***	**PURPOSE:** To protect watershed resource values. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2) **JUSTIFICATION:** This stipulation is necessary because land management actions can compromise both water quality and quantity if proper locations, mitigation and construction techniques are not utilized.				
	Soils and Geology				
GEOLOGY SOIL CSU CO ***All Surface-disturbing Activities***	**STIPULATION:** Surface occupancy or use may be restricted on lands within mapped soils with the following special characteristics: Fragile soils and mapped Mancos shale and saline soils. Special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. Prior to authorizing activities in this area, the operator may be required to submit an engineering/reclamation plan to avoid, minimize and mitigate potential effects to soil productivity. **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To improve reclamation potential, maintain soil stability and productivity of sensitive areas, minimize contributions of salinity, selenium and sediments likely to affect downstream water quality, fisheries and other downstream aquatic habitats. **EXCEPTION:** Standard exceptions apply (Section B.2).			•	

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative			
		A	B	C	D
	MODIFICATION: Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to decrease potential degradation to soil and watershed resources within the Greater Colorado River Basin. Land use decisions occurring on mapped areas of Mancos Shale (e.g. conversion of native vegetative communities to irrigated hay fields or golf courses) have been documented to mobilize selenium and contaminate ground and surface water resources. The Colorado River Basin Salinity Control Act of 1974 directed the BLM to manage the Colorado River's salinity, including salinity contributed from public lands.				
CSU-6 *(ROWA)* **Mapped Mancos Shale and Saline Soils.** *BLM surface/ federal minerals:* 355,500 acres *Private or State surface/federal minerals*: 12,000 acres ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to surface-disturbing activities within mapped Mancos Shale areas and on saline soils. **PURPOSE:** To improve reclamation potential of disturbed lands, maintain soil stability and productivity in sensitive areas, and to minimize contributions of salt, selenium, sediment, and other minerals constituents of eroding soils likely to affect downstream water quality. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to decrease potential degradation to soil and watershed resources within the Greater Colorado River Basin. Land use decisions occurring on mapped areas of Mancos Shale (e.g. conversion of native vegetative communities to irrigated hay fields or golf courses) have been documented to mobilize selenium and contaminate ground and surface water resources. The Colorado River Basin Salinity Control Act of 1974 directed the BLM to manage the Colorado River's salinity, including salinity contributed from public lands.			•	•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
CSU-7 **Natural Slopes.** *BLM surface/ federal minerals:* 173,100 acres *Private or State surface/federal minerals*: 26,100 acres ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to surface-disturbing activities associated with all other land use authorizations, permits, and leases granted in areas with natural steep slopes in the range of 25 to 40 percent. Special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. Prior to authorizing activities in this area, the operator may be required to submit an engineering/reclamation plan to mitigate potential effects to slope stability. **PURPOSE:** To minimize the risk of mass wasting and sedimentation; reduce reclamation costs; protect soil productivity, rare, or sensitive biota; minimize risk to water bodies, fisheries, and aquatic species habitats; and protect human health and safety (from landslides, mass wasting, etc.). **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to allow BLM to move surface disturbances away from natural slopes in order to reduce erosion and sediment load, and improve reclamation potential.			•	
	Vegetation				
PLANT COMMUNITY CSU CO ***All Surface-disturbing Activities***	**STIPULATION:** Surface occupancy or use may be restricted within occupied habitat that meets BLM's criteria, as established in the Resource Management Plan, for significant and/or relict plant communities: • all old growth forests and woodlands and • plant communities that meet BLM's criteria for significant plant communities Special design, construction and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. Prior to authorizing activities in this area, the operator may be required to submit a plan of development			•	

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	that would demonstrate that habitat would be preserved to maintain the viability of significant or relict plant communities. **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To conserve significant and/or relict plant communities (e.g. old growth forests, Blue Mountain Deciduous Browse/Aspen Communities and woodlands) that are not otherwise protected. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to minimize the loss of old growth trees by adjusting the location of well pads, access roads, and other development; and to limit new disturbance within relic plant communities, thus reducing fragmentation, and the possibility of degradation or loss.				
CSU-8 *(ROWA)* **Old Growth Forests and Woodlands.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions within all old growth forests and woodlands. Special design, construction and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. Prior to authorizing activities in this area, the operator may be required to submit a plan of development that would demonstrate that habitat would be preserved to maintain the viability of significant or relict plant communities. **PURPOSE:** To conserve significant and/or relict plant communities (i.e., old growth forests and woodlands) that are not otherwise protected. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to minimize the loss of old growth trees by adjusting the location of well pads, access roads, and other development.			•	•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative			
		A	**B**	**C**	**D**
	Special Status Species				
CSU-9 *(ROWA)* **BLM Sensitive Plant Species Occupied Habitat.**	**STIPULATION:** For plant species listed as sensitive by BLM, special design, construction, and implementation measures within a 100-meter (328 feet) buffer from the edge of occupied habitat may be required. In addition, relocation of operations by more than 200 meters (656 feet) may be required. **PURPOSE:** To protect BLM sensitive plant species from direct and indirect impacts, including loss of habitat. The protection buffer reduces dust transport, weed invasion, chemical and produced-water spills and those effects on BLM sensitive plant populations. It also reduces impacts to important pollinators and their habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to reduce direct impacts to sensitive status species by placing disturbances outside of occupied habitat.		•		
CSU-10 *(ROWA)* **Wildlife Habitat.** ***All Surface-disturbing Activities***	**STIPULATION:** Require proponents of surface-disturbing activities to implement specific measures to mitigate impacts of operations on wildlife and wildlife habitat within high-value or essential wildlife habitat. Measures would be determined through biological surveys, onsite inspections, effects of previous actions in the area, and BMPs. **PURPOSE:** To reduce impacts of surface disturbing activities and related actions on wildlife and wildlife habitat within high-value or crucial wildlife habitat including, but not limited to, big game winter range and Gunnison and greater sage grouse habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to remain in compliance with current BLM sage grouse direction and allow for protection of essential habitat for wildlife species.		•	•	

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
CSU-1 *(ROWA)* **Major River Corridors.** 12,700 acres ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions from 402 to 805 meters (0.25- to 0.5-mile) landward from identified NSO buffer (402 meters [0.25-mile] from ordinary high water mark or within 100 meters [328 feet] of the 100-year floodplain, whichever is greatest) on either side of the Colorado, Gunnison, and Dolores Rivers for fluid mineral development. **PURPOSE:** To protect these riverine and adjacent areas that provide: a) special status fish and wildlife species habitat: b) important riparian values: c) water quality/filtering values: d) waterfowl and shorebird production values: e) valuable amphibian habitat: and f) high scenic and recreation values of the three major rivers (Colorado, Gunnison, and Dolores). **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions, which are subject to CSU (site-specific relocation) stipulations, are as follows: • Essential future actions in which implementation of a professionally engineered design, construction, maintenance, and reclamation plan can mitigate to the fullest extent practicable all potential resource damage associated with the proposed action. • New trail construction resulting in a disturbance corridor less than or equal to 1.2 meters (48 inches) wide open to nonmotorized use. Trials would be constructed per BLM minimum design standards. • BLM on-site evaluation identifies topographic features which adequately buffer and protect riverine environments from adverse impacts. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is required to minimize potential deterioration of water quality, high scenic and recreation values, maintain natural hydrologic function and condition of stream channels, banks, floodplains, and riparian communities, and preserve wildlife habitat including designated critical habitat for federally listed fish species. The buffers are			•	

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] Protected Resource Acres/Miles Affected	Stipulation Description	Alternative			
		A	B	C	D
	sized to accommodate the rivers' larger floodplains and wider riparian zones.				
CSU-11 *(ROWA)* **Significant Plant Communities (200 meters).** ***All Surface-disturbing Activities***	**STIPULATION:** For those plant communities that meet BLM's criteria for significant plant communities, special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. Habitat areas include occupied habitat and habitat necessary for the maintenance or recovery of the species or communities. **PURPOSE:** To conserve significant plant communities and relict communities that are not otherwise protected. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to limit new disturbance within relic plant communities, thus reducing fragmentation, and the possibility of degradation or loss.			•	
CSU-12 *(ROWA)* **Significant Plant Communities (no buffer).** ***All Surface-disturbing Activities***	**STIPULATION:** For those plant communities that meet BLM's criteria for significant plant communities, special design, construction, and implementation measures, including avoidance, may be required. Habitat areas include occupied habitat and habitat necessary for the maintenance or recovery of the species or communities. **PURPOSE:** To conserve significant plant communities and relict communities that are not otherwise protected. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to limit new disturbance within relic plant communities, thus reducing fragmentation, and the possibility of degradation or loss.				•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
CSU-13 *(ROWA)* **Osprey Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions within 402 meters (0.25-mile) of active osprey nest sites. **PURPOSE:** To protect osprey habitat and nest sites. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the CSU area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect osprey nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).		•		•
CSU-14 *(ROWA)* **Ferruginous Hawk Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions within 805 meters (0.5-mile) of active ferruginous hawk nest sites, and associated alternate nests. **PURPOSE:** To protect ferruginous hawk nesting habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the CSU area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect ferruginous hawk nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).		•		•
CSU-15 *(ROWA)* **Red-tailed Hawk Nest Sites.** ***All Surface-disturbing***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions within 531 meters (0.33-mile) of active red-tailed hawk nest sites, and associated alternate nests. **PURPOSE:** To protect red-tailed hawk nesting habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the CSU area may be altered depending on the status of		•		•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] Protected Resource Acres/Miles Affected	Stipulation Description	Alternative			
		A	B	C	D
Activities	the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect red-tailed hawk nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).				
CSU-16 *(ROWA)* **Swainson's Hawk Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions within 402 meters (0.25-mile) of active Swainson's hawk nest sites and associated alternate nests. **PURPOSE:** To protect ferruginous hawk nesting habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the CSU area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect Swainson's hawk nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).		•		•
CSU-17 *(ROWA)* **Peregrine Falcon Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions within 805 meters (0.5-mile) of active peregrine falcon nest sites. **PURPOSE:** To protect peregrine falcon nesting habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the CSU area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect		•		•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] Protected Resource Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	peregrine falcon nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).				
CSU-18 *(ROWA)* **Prairie Falcon Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions within 805 meters (0.5-mile) of active prairie falcon nest sites. **PURPOSE:** To protect prairie falcon nesting habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the CSU area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect prairie falcon nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).		•		•
CSU-19 *(ROWA)* **Other Raptor Species (accipiters, falcons [except kestrel], buteos, and owls).** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions within 201 meters (0.125-mile) of an active nest site of all accipiters, falcons (except kestrel), buteos, and owls not listed in other CSU stipulations. Raptors that are listed and protected by the Endangered Species Act of 1973 and the Bald and Golden Eagle Protection Act are addressed separately. **PURPOSE:** To protect nesting habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the CSU area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect raptor nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2002).		•		•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative			
		A	B	C	D
CSU-20 *(ROWA)* **Sage-grouse Nesting and Early Brood-rearing Habitat.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to protect sage-grouse nesting and early brood-rearing habitat within 6.4 kilometers (4 miles) of an active lek or within sage-grouse nesting and early brood-rearing habitat. **PURPOSE:** To protect sage-grouse nesting and early brood-rearing habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the CSU area may be altered depending upon the active status of the lek or the geographical relationship of topographical barriers and vegetation to the lek site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect sage-grouse nesting and early brood-rearing habitat, per current scientific research recommendations (Parachute-Piceance-Roan Greater Sage-grouse Work Group 2008).				•
CSU-21 *(ROWA)* **Special Status Bat Species' Roost Sites and Winter Hibernacula.** ***All Surface-disturbing Activities***	**STIPULATION:** Require mitigation and minimization measures (as determined by the BLM biologist) for all surface occupancy and use and surface-disturbing activities within 402 meters (0.25-mile) of special status bat species' roost sites and winter hibernacula. **PURPOSE:** To protect bat-roosting and maternity sites and winter hibernacula. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to minimize impact to important bat areas.				•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] Protected Resource Acres/Miles Affected	Stipulation Description	Alternative			
		A	B	C	D
CSU-22 *(ROWA)* **Kit Fox Dens.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to, and require mitigation and minimization measures (as determined by the BLM biologist) of, surface occupancy and use and surface-disturbing activities within 200 meters (656 feet) of active kit fox dens. **PURPOSE:** To protect breeding kit fox. Note: there are currently no known breeding locations for kit fox in the GJFO. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect breeding kit fox, which have become increasingly rare in Colorado and appear to be significantly more susceptible to disturbance than other canids in the GJFO.		•		•
CSU-23 *(ROWA)* **Occupied Prairie Dog Towns.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to surface-disturbing activities within white-tailed prairie dog towns. Locate permanent above-ground structures outside of prairie dog towns. **PURPOSE:** To maintain white-tailed prairie dog habitat and distribution. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the CSU area may be altered depending upon the type of activity and existing disturbance within or adjacent to white-tailed prairie dog towns. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect prairie dogs, a keystone species whose population has been declining in the GJFO and across the western US. This stipulation would help to minimize total abandonment of towns by prairie dog colonies due to disturbance.		•		•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
	Fish and Wildlife				
CSU-1 *(ROWA)* **Major River Corridors.** 12,700 acres ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions from 402 to 805 meters (0.25- to 0.5-mile) landward from identified NSO buffer (402 meters [0.25-mile] from ordinary high water mark or within 100 meters [328 feet] of the 100-year floodplain, whichever is greatest) on either side of the Colorado, Gunnison, and Dolores Rivers for fluid mineral development. **PURPOSE:** To protect these riverine and adjacent areas that provide: a) special status fish and wildlife species habitat: b) important riparian values: c) water quality/filtering values: d) waterfowl and shorebird production values: e) valuable amphibian habitat: and f) high scenic and recreation values of the three major rivers (Colorado, Gunnison, and Dolores). **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, exceptions, which are subject to CSU (site-specific relocation) stipulations, are as follows: • Essential future actions in which implementation of a professionally engineered design, construction, maintenance, and reclamation plan can mitigate to the fullest extent practicable all potential resource damage associated with the proposed action. • New trail construction resulting in a disturbance corridor less than or equal to 1.2 meters (48 inches) wide open to nonmotorized use. Trails would be constructed per BLM minimum design standards. • BLM on-site evaluation identifies topographic features which adequately buffer and protect riverine environments from adverse impacts. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is required to minimize potential deterioration of water quality, high scenic and recreation values, maintain natural hydrologic function and condition of stream channels, banks, floodplains, and riparian communities, and preserve wildlife habitat including designated			•	

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	critical habitat for federally listed fish species. The buffers are sized to accommodate the rivers' larger floodplains and wider riparian zones.				
CSU-10 *(ROWA)* **Wildlife Habitat.** ***All Surface-disturbing Activities***	**STIPULATION:** Require proponents of surface-disturbing activities to implement specific measures to mitigate impacts of operations on wildlife and wildlife habitat within high-value or crucial wildlife habitat. Measures would be determined through biological surveys, onsite inspections, effects of previous actions in the area, and BMPs. **PURPOSE:** To reduce impacts of surface disturbing activities and related actions on wildlife and wildlife habitat within high-value or crucial wildlife habitat including, but not limited to, big game winter range and Gunnison and greater sage grouse habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to remain in compliance with current BLM sage grouse direction and allow for protection of essential habitat for wildlife species.		•	•	
WILDLIFE HABITAT CSU CO ***All Surface-disturbing Activities***	**STIPULATION:** Surface occupancy or use may be restricted within the following wildlife emphasis or priority areas, as identified in the Resource Management Plan: • Beehive (habitat for mule deer and elk) (4,700 acres); • A portion of East Salt Creek (habitat for mule deer and elk) (20,500 acres); • Glade Park (habitat for Gunnison sage-grouse, mule deer, and elk) (27,200 acres); • A portion of Prairie Canyon (long billed curlew, long eared owl, pronghorn antelope, white-tailed prairie dog, kit fox, and burrowing owl habitat) (16,500 acres); • A portion of Rapid Creek (wintering and migratory habitat for mule deer and elk) (26,900 acres); and • South Shale Ridge (deer and elk wintering grounds) (3,500 acres).		•		

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
	Special design, construction and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. A plan of development may be required to demonstrate how potential adverse impacts to wildlife habitat will be mitigated. **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To protect lands identified in the Resource Management Plan as unique and important wildlife habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect the highest priority wildlife habitat for deer, elk, antelope, bighorn sheep, and sage-grouse, Wildlife emphasis areas were identified in coordination with CPW biologists.				
CSU-24 *(ROWA)* **Deer and Elk Migration and Movement Corridors.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to surface-disturbing activities within migration and movement corridors for deer and elk. **PURPOSE:** To protect deer and elk migration and movement corridors. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to ensure connectivity between summer and winter ranges for deer and elk. Fragmentation is an increasing problem in deer and elk habitat and this stipulation would help to maintain existing corridors on BLM lands.		•	•	

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative			
		A	**B**	**C**	**D**
CSU-25 **Wildlife Emphasis Areas.** *Alternative C:* 90,400 acres *Alternative D:* 33,400 acres ***All Surface-disturbing Activities***	**STIPULATION**: Apply CSU (site-specific relocation) restrictions to surface-disturbing activities within the following wildlife emphasis areas: Alternative C: • A portion of East Salt Creek (habitat for mule deer and elk) (21,700 acres); • Hawxhurst (wintering and migratory habitat for bighorn sheep, mule deer, and elk) (9,400 acres); • Indian Point (habitat for pronghorn antelope and wintering habitat for mule deer and elk) (11,400 acres); • A portion of Prairie Canyon (long billed curlew, long eared owl, pronghorn antelope, white-tailed prairie dog, kit fox, and burrowing owl habitat) (12,500 acres); • A portion of Rapid Creek (wintering and migratory habitat for mule deer and elk) (26,900 acres); • Red Mountain (wintering and migratory habitat for mule deer and elk) (5,000 acres); and • South Shale Ridge (deer and elk wintering grounds) (3,500 acres). Alternative D: • Roan and Carr Creeks (33,400 acres). **PURPOSE:** To protect core wildlife areas, which are areas of the highest value/top-ranked wildlife habitat (by BLM and CPW) for multiple species. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect the highest priority wildlife habitat for deer, elk, antelope, bighorn sheep, and sage-grouse, Wildlife emphasis areas were identified in coordination with CPW biologists.			•	•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	Wild Horses				
CSU-2 (Exhibit GJ-2FA) (BLM 1987) **Scenic and Natural Values (Little Book Cliffs Wild Horse Area).** 36,100 acres ***Fluid Minerals Only***	**STIPULATION:** Special design and reclamation measures (for fluid minerals only) may be required to protect the outstanding scenic and natural landscape value of the following portion(s) of this lease: <LEGAL_DESCRIPTIONS> Special design and reclamation measures may include transplanting trees and shrubs, fertilization, mulching, special erosion-control structures, irrigation, site recontouring to match the original contour, buried tanks and low-profile equipment, and painting to minimize visual contrasts. Surface-disturbing activities may be denied in sensitive areas, such as unique geologic features and rock formations, visually prominent areas, and high recreation use areas. **PURPOSE:** To protect scenic and natural values in the Little Book Cliffs Wild Horse Area. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concerns(s) identified.	•			
CSU-26 **Little Book Cliffs Wild Horse Range.** 35,200 acres ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to surface-disturbing activities within the LBCWHR. **PURPOSE:** To protect wild horses in the LBCWHR. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to mitigate impacts that could interfere with the protection and management of wild horses in the LBCWHR.				•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
	Cultural Resources				
CSU-27*(ROWA)* **Allocation to Scientific Use Category.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to certain surface uses, as specified below, except archaeological documentation and excavation, within 100 meters (328 feet) around eligible or potentially eligible sites allocated to Scientific Use. **PURPOSE:** To protect unique scientific information in sites that may be damaged from inadvertent or unauthorized uses. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** The BLM's Authorizing Officer may modify the site-protection boundary on a case-by-case basis, taking into account topographical barriers, the nature of the proposed action, and the nature of the cultural resource site and/or area. **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to address indirect or secondary impacts that can occur to cultural resources. Indirect and secondary impacts are typically not mitigated through data recovery by the proponent. Managing properties by addressing only direct impacts can lead to adverse effect and the loss of the resource. This stipulation allows the BLM to mitigate impacts that can cause significant degradation to the site integrity criteria that are applied in the designation of the cultural resource as eligible or potentially eligible for nomination to the NRHP *(36 CFR part 800.5(a)(1)).*	•	•	•	
CSU-28 *(ROWA)* **Allocation to Public Use Category.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to certain surface uses, as specified below, within 100 meters (328 feet) around sites allocated to Public Use. In addition, consider factors such as integrity of setting, recreation opportunity, or visual impacts that projects may have on sites allocated to this use. **PURPOSE:** To protect the values that contribute to sites allocated to Public Use. **EXCEPTION:** Standard exceptions apply (Section B.2).	•	•	•	

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	MODIFICATION: The BLM's Authorizing Officer may modify the site-protection boundary on a case-by-case basis, taking into account topographical barriers, the nature of the proposed action, and the nature of the cultural resource site and/or area. **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect sites allocated to Public Use, including those that may not meet the criteria for the NRHP but are important for heritage tourism as a visual resource of a rural landscape.				
CSU-29 *(ROWA)* **Sub-surface Inventory.** *Alternative B:* 53,500 acres *Alternative C:* 68,400 acres *Alternative D:* 51,600 acres ***All Surface-disturbing Activities***	**STIPULATION**: Require sub-surface inventory for deep sub-surface-disturbing activities and buried ROW in the following locations and in additional areas where high potential for subsurface resources may be identified in the future: Alternative B: • Grand Mesa Slopes (16,000 acres); • Indian Creek (20,200 acres); and • Sunnyside (17,300 acres). Alternative C: • Grand Mesa Slopes (24,400 acres); • Indian Creek (20,200 acres); and • Sunnyside (24,000 acres). Alternative D: • Grand Mesa Slopes (16,000 acres); • Indian Creek (20,200 acres); and • Sunnyside (15,400 acres). **PURPOSE:** To protect cultural resources. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is needed to protect buried cultural resources within areas of high potential for sub-surface activities.		•	•	•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
CSU-5 (ROWA) (BLM 1987) **Known Cultural Resource Values.** ***Fluid Minerals Only***	**STIPULATION:** Important cultural resource values <RESOURCE_VALUE> are present on the following portions of this lease: <LEGAL_DESCRIPTIONS>. Surface-disturbing activities (for fluid minerals only) must avoid these areas. **PURPOSE:** To protect known cultural sites. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, an exception could be granted if mitigation of impacts is agreed to by the Authorized Officer. Where impacts cannot be mitigated to the satisfaction of the Authorized Officer, surface occupancy and use on that area must be prohibited. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2).	•			
	Visual Resources				
CSU-30 *(ROWA)* **VRM Class II.** *Alternative B:* 354,900 acres *Alternative C:* 556,600 acres *Alternative D:* 194,800 acres ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to fluid mineral leasing and other surface-disturbing activities within all areas designated as VRM Class II. Require that surface-disturbing activities meet the objectives of VRM Class II. **PURPOSE:** To protect visual resources. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, an exception could be granted for bond projects within scenic byways to ensure that visual and reclamation objectives are achieved. Facility design should incorporate viewshed analysis and modeling to minimize impacts to visual resources. Special mitigation measures such as facility placement and color selection have been proposed to reduce impacts to visual resources. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is needed to maintain the visual integrity within designated Class II VRM areas. A CSU will allow placement of facilities and disturbances outside of the critical view sheds.		•	•	•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
CSU-2 (BLM 1987) **Scenic and Natural Landscape Values.** 310,600 acres ***Fluid Minerals Only***	**STIPULATION:** Special design and reclamation measures (for fluid minerals only) may be required to protect the outstanding scenic and natural landscape values located on the following portions of this lease: <LEGAL_DESICRIPTION>. • Bangs Benches (Exhibit GJ-2GJ) (32,000 acres); • The Book Cliffs (Exhibit GJ-2GC) (31,100 acres); • Established BLM Recreation Sites (Exhibit GJ-2GB and Exhibit GJ-2IB) (1,000 acres); • Grand Mesa Slopes (Exhibit GJ-2GI) (62,000 acres); • Granite Creek Benches (Exhibit GJ-2GL) (23,400 acres); • Gunnison River Corridor (Exhibit GJ-2GF) (1,200 acres); • Highway Corridors (Exhibit GJ-2GP) (69,400 acres); • Hunter/Garvey (Exhibit GJ-2GN) (24,700 acres); • Little Book Cliffs Wild Horse Area (Exhibit GJ-2FA) (33,000 acres); • Sinbad Valley (Exhibit GJ-2GK) (6,400 acres); • South Shale Ridge (Exhibit GJ-2GG) (24,400 acres); and • Unaweep Valley (Exhibit GJ-2GM) (2,000 acres). Special design and reclamation measures may include transplanting trees and shrubs, fertilization, mulching, special erosion-control structures, irrigation, site recontouring to match the original contour, buried tanks and low-profile equipment, and painting to minimize visual contrasts. Surface-disturbing activities may be denied in sensitive areas, such as unique geologic features and rock formations, visually prominent areas, and high recreation use areas. **PURPOSE:** To protect outstanding scenic and natural landscape values. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2).	•			

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	Recreation and Visitor Services				
CSU-2 (BLM 1987) **Scenic and Natural Landscape Values (Recreation Resources).** 89,200 acres ***Fluid Minerals Only***	**STIPULATION:** Special design and reclamation measures (for fluid minerals only) may be required to protect the outstanding scenic and natural landscape value of the following portion(s) of this lease: <LEGAL_DESCRIPTIONS> • Bangs Benches (Exhibit GJ-2IJ) (42,900acres); • Granite Creek Benches (Exhibit GJ-2IH) (23,400 acres); • Hunter/Garvey Benches (Exhibit GJ-2IG) (21,700 acres); and • Lower Gunnison River (Exhibit GJ-2IL) (1,200 acres). Special design and reclamation measures may include transplanting trees and shrubs, fertilization, mulching, special erosion-control structures, irrigation, site recontouring to match the original contour, buried tanks and low-profile equipment, and painting to minimize visual contrasts. Surface-disturbing activities may be denied in sensitive areas, such as unique geologic features and rock formations, visually prominent areas, and high recreation use areas. **PURPOSE:** To protect recreation resources. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concerns(s) identified.	•			
CSU-31 *(ROWA)* **Recreation.** ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to surface occupancy and use and surface-disturbing activities to minimize conflicts with developed (and future) recreation sites and to mapped (and future) national/regional trails, local system trails that connect communities, and trailheads and interpretive sites with exceptional recreation values or significant public interest. Apply this stipulation to the following sites that lie outside of designated RMAs: • Low Gap Recreation Site;		•	•	•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	• North Soda Recreation Site; • Miracle Rock Recreation Site; • Mud Springs Campground; and • West Creek Picnic Site. **PURPOSE:** To minimize conflicts with developed (and future) recreation sites and to mapped (and future) national/regional trails, local system trails that connect communities, and trailheads and interpretive sites with exceptional recreation values or significant public interest. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to assure significant public investment and desired recreation opportunities are protected from surface-disturbing occupancy.				
CSU-32 **Recreation Management Areas.** *Alternative B:* 227,100 acres *Alternative C:* 42,700 acres *Alternative D:* 58,100 acres ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions in the following RMAs: Alternatives B: • Grand Valley OHV SRMA (9,700 acres) • Barrel Spring ERMA (24,700 acres) • Gateway ERMA (78,100 acres) • Grand Valley Shooting Ranges ERMA (750 acres) • Gunnison River Bluffs ERMA (800 acres) • Horse Mountain ERMA (5,100 acres) • North Desert ERMA (107,900 acres) Alternative C • North Fruita Desert (42,700 acres) Alternative D: • Castle Rock (4,400 acres) • Grand Valley OHV (9,600 acres) • North Fruita Desert (44,100 acres) **PURPOSE:** To protect recreation outcomes and setting prescriptions.		•	•	•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	EXCEPTION: Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect areas important to recreation users which may also include large facility investments. Protection of RMZs is necessary to meet desired recreation outcomes.				
	Lands and Realty				
DISPOSAL CSU CO ***All Surface-disturbing Activities***	**STIPULATION:** Surface occupancy or use may be restricted due to lands identified for disposal in the Resource Management Plan. Special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. **PURPOSE:** To preserve the value of disposal tracts and/or protect facilities or uses for which these tracts of land were identified for disposal. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to preserve the value of disposal tracts and/or protect facilities or uses for which these tracts of land were identified for disposal.			•	
CSU-33 *(CSU CO-25)* **Disposal Tracts.** ***All Surface-disturbing Activities***	**STIPULATION:** Special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet) may be required on disposal tracts. **PURPOSE:** To preserve the value of disposal tracts and/or protect facilities or uses for which these tracts of land were identified for disposal. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, underground facilities may be excepted.				•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	MODIFICATION: Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to preserve the value of disposal tracts and/or protect facilities or uses for which these tracts of land were identified for disposal.				
	Coal				
COAL MINE CSU CO 9,000 acres ***Fluid Minerals Only***	**STIPULATION:** Surface occupancy or use (for fluid minerals only) may be restricted due to surface or underground coal mines. Special design, construction and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. Operations proposed within the area of an approved surface or underground coal mine will be relocated outside the area to be mined or to accommodate room and pillar mining operations. **PURPOSE:** To protect surface or underground coal mines. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to allow underground coal operations within oil and gas leases while reducing safety concerns.		•		
CSU-34 *(CSU CO-25)* **Federally Leased Coal.** 9,000 acres ***Fluid Minerals Only***	**STIPULATION:** Where applicable, apply CSU (site-specific relocation) restrictions to new oil and gas leases and operations within the area of federally leased coal. Relocate oil and gas operations outside the area to be mined or locate to accommodate room and pillar mining operations. **PURPOSE:** To protect federally leased coal lands. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to allow underground coal operations within oil and gas leases while reducing safety concerns.			•	•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] Protected Resource Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	ACEC				
CSU-39 **Roan and Carr Creeks ACEC.** 33,600 acres ***All Surface-disturbing Activities***	**STIPULATION:** Special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required in the Roan and Carr Creeks ACEC (33,600 acres). **PURPOSE:** To protect and prevent irreparable damage to unique riparian habitats, genetically pure populations of cutthroat trout, and Greater Sage-Grouse habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2).		•		
	Wild and Scenic Rivers				
CSU-35 *(ROWA)* **WSR Study Segments Classified as Scenic and Recreational.** 22,980 acres ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions within 402 meters (0.25-mile) on either side of the ordinary high-water mark or other preliminary or final boundary of identified eligible or suitable WSR study corridors, as defined in the WSR Suitability Report, of the following segments classified as "Scenic" or "Recreational." Special design, construction, and implementation measures, including relocation of operations by more than 200 meters (656 feet), may be required. • Colorado River Segment 1 (2,200 acres); • Colorado River Segment 2 (120 acres); • Dolores River (5,900 acres); • North Fork Mesa Creek (700 acres); • Blue Creek (2,900 acres); • Gunnison River Segment 2 (970 acres); • Roan Creek (2,000 acres); • Carr Creek (1,800 acres); • Rough Canyon Creek (1,200 acres); • East Creek (1,900 acres); • West Creek (1,700 acres); and • Ute Creek (1,400 acres). **PURPOSE:** To protect WSR outstandingly remarkable values, free-flowing nature, and water quality of eligible or suitable river			•	

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	segments and their consequent recreational, social, economic, and environmental significance. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect ORVs associated with WSR segments, and allow BLM to place disturbances 402 meters (0.25-mile) away from the identified segment.				
	National Trails				
CSU-36 **Old Spanish National Historic Trail.** 3,400 acres ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to fluid mineral leasing and other surface-disturbing activities within 805 meters (0.5-mile) of either side of the Old Spanish National Historic Trail. **PURPOSE:** To protect visual resources associated with the trail. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect to protect visual resources along this congressionally designated historic trail.			•	
CSU-37 **Scenic Byways (0.5-mile).** 32,500 acres ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to fluid mineral leasing and other surface-disturbing activities within 805 meters (0.5-mile) of either side of centerline of the following scenic byways: • Dinosaur Diamond Prehistoric Highway (National Scenic Byway and All American Road) (14,300 acres); • Grand Mesa Scenic and Historic Byway (1,200 acres); and • Unaweep-Tabeguache Scenic and Historic Byway (17,000 acres). **PURPOSE:** To protect the quality of the scenic (visual) values of		•	•	

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	scenic, historic, or backcountry byways. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, an exception could be granted if: (a) a viewshed analysis indicates minimal impairment of the visual resources from the driving corridor; or (b) the action is determined to be consistent and compatible with protection or enhancement of the resource values, or the use would provide suitable opportunities for public enjoyment of these resources. An exception could also be granted for bond projects within scenic byways to ensure that visual and reclamation objectives are achieved. Facility design should incorporate viewshed analysis and modeling to minimize impacts to visual resources. Special mitigation measures such as facility placement and color selection have been proposed to reduce impacts to visual resources. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to place surface-disturbing activities along scenic byways in areas that do not affect values associated with the identified scenic byway.				
CSU-38 **Scenic Byways (0.25-mile).** 29,500 acres ***All Surface-disturbing Activities***	**STIPULATION:** Apply CSU (site-specific relocation) restrictions to fluid mineral leasing and other surface-disturbing activities within 402 meters (0.25-mile) of the following scenic byways: • Lands' End (540 acres); • John Brown Canyon (1,800 acres); • Dinosaur Diamond Prehistoric Highway (National Scenic Byway and All American Road) (7,000 acres); • Grand Mesa Scenic and Historic Byway (860 acres); • Unaweep-Tabeguache Scenic and Historic Byway (7,700 acres); • Niche to Blue Mesa (3,800 acres); and • Winter Flats Road (7,800 acres). **PURPOSE:** To protect scenic views in driving corridors. **EXCEPTION:** Standard exceptions apply (Section B.2). In				•

Table B-6
Controlled Surface Use (CSU) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative			
		A	B	C	D
	addition, an exception could be granted if: (a) a viewshed analysis indicates minimal impairment of the visual resources from the driving corridor; or (b) the action is determined to be consistent and compatible with protection or enhancement of the resource values, or the use would provide suitable opportunities for public enjoyment of these resources. An exception could also be granted for bond projects within scenic byways to ensure that visual and reclamation objectives are achieved. Facility design should incorporate viewshed analysis and modeling to minimize impacts to visual resources. Special mitigation measures such as facility placement and color selection have been proposed to reduce impacts to visual resources. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to ensure surface-disturbing activities do not affect values associated with the identified scenic byway.				

[1]Existing stipulations currently in effect in Alternative A, current management, are noted in italics and are from the current RMP (BLM 1987).

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	Special Status Species				
TL-1 *(ROWA)* **Salmonid and Native Non-salmonid Fishes (brown, brook, rainbow, and cutthroat trout; bluehead and flannelmouth sucker; roundtail chub; mountain whitefish; Paiute and mottled sculpin; and speckled dace).** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit in-channel stream work in all occupied streams during fish spawning, egg incubation, and fry emerging seasons. Fish spawning, egg incubation, and fry emerging seasons vary by elevation and temperatures; however, the following intervals generally apply in Colorado: • Cutthroat trout (various subspecies): May 1-September 1 • Rainbow trout: March 1-June 15 • Brown trout: October 1-May 1 • Brook trout: August 15-May 1 • Sculpin: May 1-July 31 • Bluehead sucker: May 1-July 15 • Flannelmouth sucker: April 1-July 1 • Roundtail chub: May 15-July 15 • Speckled dace: May 1-August 31 • Mountain whitefish: October 1-November 30 **PURPOSE:** To protect redds (egg masses) in the gravel and emerging fry of native fish populations. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, this stipulation only applies to construction and drilling and does not apply to operations and maintenance. If competing species are involved, the BLM may select to implement species-specific dates for native fish versus nonnative species. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect important native and game fish breeding.		•	•	
TL-2 *(ROWA)* **Occupied Cutthroat Trout Waters.** ***All Surface-disturbing***	**STIPULATION:** Prohibit in-channel work in all occupied cutthroat trout streams during spring spawning periods of April 1 to August 1. **PURPOSE:** To protect redds (egg masses) in the gravel and emerging fry. **EXCEPTION:** Standard exceptions apply (Section B.2).				•

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
Activities	**MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect important native fish species, including a USFWS-listed species.				
TL-3 *(ROWA)* **Migratory Bird Habitat.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities, including vegetation-removal projects, in migratory bird habitat during nesting season when nesting birds are present. Alternative B: May 15 to July 15 or as site-specific analysis dictates. Alternative C: April 15 to July 31 or as site-specific analysis dictates. **PURPOSE:** To minimize disruption of migratory bird nesting activity. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, this stipulation only applies to construction and drilling, and does not apply to operations and maintenance. The TL area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect migratory bird habitat and ensure compliance with the Migratory Bird Treaty Act (Information Bulletin No. 2010-110); BLM Memorandum of Understanding with US Fish and Wildlife Service).		•	•	
TL-4 *(ROWA)* **Birds of Conservation Concern's Habitat.**	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities, including vegetation-altering projects, in birds of conservation concern's habitat (USFWS 2008) during nesting season (May 15 to July 15 or as site-specific analysis dictates) when nesting birds are present. **PURPOSE:** To protect nesting osprey from human disturbance				•

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
All Surface-disturbing Activities	that could affect nest success. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the TL area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect osprey nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008) and ensure compliance with the Migratory Bird Treaty Act (Information Bulletin No. 2010-110); BLM Memorandum of Understanding with US Fish and Wildlife Service).				
WILDLIFE RAPTOR NESTS TL CO ***All Surface-disturbing Activities***	**STIPULATION:** No surface use is allowed within a 402 meter (0.25-mile) radius of active raptor nests, as mapped in the Resource Management Plan, BLM's GIS database or other maps provided by local, state, federal or tribal agencies that are analyzed and accepted by the BLM, during the following time period(s), or until fledging and dispersal of young: • Osprey nests: April 1 to August 31. • Red-tailed hawk nests, including any alternate nests: February 15 to July 15. • Swainson's hawk nests and associated alternate nests: April 1 to July 15. • Burrows or burrowing owl nest sites: March 1 to August 15. • Great horned owl nests: February 1 to August 15. • Other owls and raptors: March 1 to August 15. • Cooper's hawk, sharp shinned hawk, and northern harrier nests: April 1 to August 15. **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To prevent disruption of reproductive activity of raptors during the production period.			•	

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	EXCEPTION: Standard exceptions apply (Section B.2). This stipulation only applies to construction and drilling, and does not apply to operations and maintenance. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).				
WILDLIFE SENSITIVE RAPTOR NESTS TL CO ***All Surface-disturbing Activities***	**STIPULATION:** No surface use is allowed within an 805 meter (0.5-mile) radius of active or inactive raptor nests, as mapped in the Resource Management Plan, BLM's GIS database or other maps provided by local, state, federal or tribal agencies that are analyzed and accepted by the BLM, during the following time period(s), or until fledging and dispersal of young: • Ferruginous hawk nests, including any alternate nests: February 1 to July 15. • Goshawk nest sites: March 1 to September 30. • Peregrine and prairie falcon nest cliff(s): March 15 to July 31. **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To prevent disruption of reproductive activity of raptors during the production period. **EXCEPTION:** Standard exceptions apply (Section B.2). This stipulation only applies to construction and drilling, and does not apply to operations and maintenance. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect ferruginous hawk nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).		•		

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
TL-5 *(ROWA)* **Osprey Nests.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface disturbing activities, and intensive human activities that may affect nesting success within 402 meters (0.25-mile) of active osprey nests from April 1 to August 31. **PURPOSE:** To protect nesting osprey from human disturbance that could affect nest success. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the TL area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect osprey nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).			•	•
TL-6 *(ROWA)* **Ferruginous Hawk Nests.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface disturbing activities, and intensive human activities that may affect nesting success within 402 meters (0.25-mile) (Alternatives C and D) of active ferruginous hawk nests, including any alternate nests, from February 1 to July 15. **PURPOSE:** To protect ferruginous hawks from human impacts that could affect nest success. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the TL area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect ferruginous hawk nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).			•	•

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
TL-7 *(ROWA)* **Red-tailed Hawk Nests.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface disturbing activities, and intensive human activities that may affect nesting success within 531 meters (0.33-mile) of active red-tailed hawk nests, including any alternate nests, from February 15 to July 15. **PURPOSE:** To protect nesting red-tailed hawks from human impacts that could affect nest success. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the TL area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect red-tailed hawk nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).			•	•
TL-8 *(ROWA)* **Swainson's Hawk Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface disturbing activities, and intensive human activities that may affect nesting success within 402 meters (0.25-mile) of active Swainson's hawk nests and associated alternate nests from April 1 to July 15. **PURPOSE:** To protect nesting Swainson's hawks from human impacts that could affect nest success. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the TL area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect Swainson's hawk nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).			•	•

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
TL-14 (ROWA) (Exhibit GJ-14EB) (BLM 1987) **Threatened and Endangered Seasonal Habitat (Peregrine Falcon Habitat).** ***Fluid Minerals Only***	**STIPULATION:** In order to protect important seasonal habitat of threatened or endangered animal species, any lease operations (fluid minerals only) which may affect these species will be allowed only during the following period: Occupancy is allowed <BEGIN_DATE> to <END_DATE> on the lands described below: <LEGAL_DESCRIPTIONS>. **PURPOSE:** To protect bald eagle habitat. **EXCEPTION:** Exceptions to this limitation in any particular year may be specifically approved in writing by the Authorized Officer. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2).	•			
TL-9 *(ROWA)* **Peregrine and Prairie Falcon Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface disturbing activities, and intensive human activities that may affect nesting success within 805 meters (0.5-mile) of active peregrine and prairie falcon nest cliff(s) from March 15 to July 31. **PURPOSE:** To protect nesting peregrine and prairie falcons from human impacts that could affect nest success. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the TL area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect peregrine and prairie falcon nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).			•	•

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
TL-10 *(ROWA)* **Goshawk Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface-disturbing activities, and intensive human activities that may affect nesting success within 805 meters (0.5-mile) of active goshawk nest sites from March 1 to September 30. **PURPOSE:** To protect nesting goshawks from human impacts that could affect nest success. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the TL area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect goshawk nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).			•	•
TL-11 *(ROWA)* **Burrowing Owl Burrows and Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface disturbing activities, and intensive human activities that may affect nesting success within 402 meters (0.25-mile) of active burrows or burrowing owl nest sites from March 1 to August 15. **PURPOSE:** To protect nesting burrowing owls from human impacts that could affect nest success. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect nesting burrowing owls.			•	•

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] Protected Resource Acres/Miles Affected	Stipulation Description	Alternative			
		A	B	C	D
TL-12 *(ROWA)* **Other Raptor Species (accipiters, falcons [except kestrel], buteos, and owls).** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface disturbing activities, and intensive human activities that may affect nesting success within 402 meters (0.25-mile) of active nests from February 1 to August 15 (great horned owl), March 1 to August 15 (other owls and raptors), and April 1 to August 15 (Cooper's hawk, sharp shinned hawk, and northern harrier). **PURPOSE:** To protect reproductive activity at active nest sites. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect raptor species per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).			•	•
TL-13 *(ROWA)* **Golden Eagle Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit human encroachment within an 805-meter (0.5-mile [Alternative B]) or 402-meter (0.25-mile [Alternatives C and D]) radius of active golden eagle nests and associated alternate nests, as mapped in the RMP, BLM's GIS database, or other maps provided by local, state, federal, or tribal agencies that are analyzed and accepted by the BLM, during the following time period, or until fledging and dispersal of young: December 15 to July 15. **PURPOSE:** To prevent disruption of reproductive activity of golden eagles. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the TL area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect golden eagle nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).	•	•	•	

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
TL-14 (ROWA) (Exhibit GJ-14EA) (BLM 1987) **Threatened and Endangered Seasonal Habitat (Bald Eagle Habitat).** ***Fluid Minerals Only***	**STIPULATION:** In order to protect important seasonal habitat of threatened or endangered animal species, any lease operations (fluid minerals only) which may affect these species will be allowed only during the following period: Occupancy is allowed <BEGIN_DATE> to <END_DATE> on the lands described below: <LEGAL_DESCRIPTIONS>. **PURPOSE:** To protect bald eagle habitat. **EXCEPTION:** Exceptions to this limitation in any particular year may be specifically approved in writing by the Authorized Officer. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2).	•			
TL-14 *(ROWA)* **Bald Eagle Nest Sites.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit human encroachment within an 805-meter (0.5-mile) radius of active bald eagle nests from November 15 to July 31. **PURPOSE:** To prevent disruption of reproductive activity of bald eagles. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, this stipulation only applies to construction and drilling, and does not apply to operations and maintenance. The TL area may be altered depending on the status of the nest site or the geographical relationship of topographic barriers and vegetation screening to the nest site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect bald eagle nesting habitat per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).		•	•	•
TL-15 *(ROWA)* **Bald Eagle Winter Roost.** ***All Surface-***	**STIPULATION:** Prohibit activity within 402 meters (0.25-mile) of bald eagle winter roosts from November 15 to March 15. Additional restrictions may be necessary within 805 meters (0.5-mile) of active bald eagle winter roosts if there is a direct line of sight from the roost to the activities.		•	•	•

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
disturbing Activities	**PURPOSE:** To protect bald eagles from human impacts that could affect winter survival. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the TL area may be altered depending on the status of the roost site or the geographical relationship of topographic barriers and vegetation screening to the roost site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect bald eagle winter roosts per CPW's *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW 2008).				
TL-16 *(ROWA)* **Occupied Sage-grouse Winter Habitat.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface-disturbing activities, and intensive human activities in occupied sage-grouse winter habitat from December 1 to March 15. **PURPOSE:** To protect sage-grouse (Gunnison and greater) from human impacts that could affect winter survival. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect sage-grouse from disturbance in a time of year when the added stress from disturbance can lead to death.		•	•	
TL-17 *(ROWA)* **Sage-grouse Leks (4 miles).** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface-disturbing activities, and intensive human activities within 6.4 kilometers (4 miles) of sage-grouse leks from March 1 to June 30. **PURPOSE:** To protect breeding and nesting sage-grouse (Gunnsion and greater) from human impacts that could affect nest success. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, the NSO area may be altered depending upon the active status of the lek or the geographical relationship of		•		

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	topographical barriers and vegetation to the lek site. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect breeding and nesting sage-grouse per current research recommendations (Parachute-Piceance-Roan Greater Sage-grouse Work Group 2008).				
TL-18 *(ROWA)* **Sage-grouse Leks, Nesting, and Early Brood-rearing Habitat (0.6-mile).** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface-disturbing activities, and intensive human activities from March 1 to June 30 within 966 meters (0.6-mile) of the lek or within sage-grouse nesting and early brood-rearing habitat. **PURPOSE:** To protect breeding and nesting sage-grouse (Gunnsion and greater) from human impacts that could affect nest success. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect greater and Gunnison sage-grouse breeding habitat.				•
TL-19 *(ROWA)* **Occupied Prairie Dog Towns.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use and surface-disturbing activities within active white-tailed prairie dog towns from April 1 to July 15. **PURPOSE:** To avoid impacts to white-tailed prairie dogs during the pupping season. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect prairie dogs during the breeding season to allow for distribution of young.		•		•

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	Fish and Wildlife				
TL-1 *(ROWA)* **Sport and Native Fish (brown, brook, rainbow, and cutthroat trout; bluehead and flannelmouth sucker; roundtail chub; mountain whitefish; Paiute and mottled sculpin; and speckled dace).** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit in-channel stream work in all occupied streams during appropriate spring and fall spawning periods. Alternative B: Rainbow and cutthroat trout, bluehead and flannelmouth sucker, roundtail chub, and Paiute and mottled sculpin (April 1 to August 1); brown and brook trout (October 1 to November 30). Alternative C: Cutthroat trout (May 1-September 1), Rainbow trout (March 1-June 30), Brown trout (October 1-May 1), Brook trout (August 1-May 1), Sculpin (May 1-July 31), Bluehead sucker (May 1-July 31), Flannelmouth sucker (April 1-July 1), Roundtail chub (May 1-July 31), Speckled dace (May 1-August 31), Mountain whitefish (October 1-November 30). **PURPOSE:** To protect redds (egg masses) in the gravel and emerging fry. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect important native and game fish breeding.		•	•	
TL-2 *(ROWA)* **Occupied Cutthroat Trout Waters.** ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit in-channel work in all occupied cutthroat trout streams during spring spawning periods of April 1 to August 1. **PURPOSE:** To protect redds (egg masses) in the gravel and emerging fry. **EXCEPTION:** Standard exceptions apply (Section B.2). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect important native fish species, including a USFWS-listed species.				•

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
TL-12 (ROWA) (BLM 1987) **Deer and Elk Winter Range.** 262,800 acres ***Fluid Minerals Only***	**STIPULATION:** Lease activities such as exploration, drilling, and other development (for fluid minerals only) will be allowed only during the period from May 1 to December1 on the following portions of this lease: <LEGAL_DESCRIPTION>. **PURPOSE:** To protect important seasonal wildlife habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, this limitation does not apply to maintenance and operation of producing wells and range management. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concerns(s) identified.	•			
TL-20 *(ROWA)* **Big Game Winter Range.** 474,500 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface-disturbing activities, and intensive human activities from December 1 to May 1 to protect big game winter range as mapped by the CPW. Certain areas and/or routes within big game winter range may be closed to foot, horse, motorized, and/or mechanized travel from December 1 to May 1. **PURPOSE:** To reduce disruption of big game during the winter season. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, this limitation does not apply to essential maintenance and operation of facilities (e.g., producing wells) and range administration. An exception will be granted only when the proposed action would not cause unacceptable harm to big game based on the following factors: 1. Winter conditions (such as snow cover and crusting) at the project site and vicinity; 2. Predictable, short-term (1 week) storm forecasts for the project area; 3. Period of winter in which the exception is requested (e.g., after April 15, before December 15, heart of winter); 4. Project site location relative to the size and spatial configuration of delineated critical winter range, open		•	•	•

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	roads and trails, and other background disturbance; 5. Length of time that activities would encroach on the period of the winter range stipulation; 6. Number of vehicle trips per day in and out of the work site; 7. Time of day that activity occurs (after dark generally prohibited); 8. Actual big game use of the area; 9. Cumulative impacts on big game (such as other activities in the area); and 10. Additional site-specific or general concerns, as appropriate. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect big game winter habitat from surface-disturbing and major human activities during the periods of the year when the habitat is occupied. This habitat is critical to the viability of big game herds. These areas will be managed by BLM to reflect CPW most current big game winter range maps.				
TL-9 (ROWA) (BLM 1987) **Bighorn Seasonal Stipulation.** ***Fluid Minerals Only***	**STIPULATION:** Lease activities such as exploration, drilling, and other development (for fluid minerals only) will be allowed only during the period from May 1 to December 1 on the following portions of this lease: <LEGAL_DESCRIPTION>. **PURPOSE:** To protect important seasonal bighorn habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, this limitation does not apply to essential maintenance and operation of facilities (e.g., producing wells) and range administration. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified.	•			

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
TL-4 (ROWA) (BLM 1987) **Elk Calving Area.** 3,400 acres ***Fluid Minerals Only***	**STIPULATION:** Lease activities such as exploration, drilling, and other development (for fluid minerals only) will be allowed only during the period from June 15 to May 15 on the following portions of this lease. **PURPOSE:** To protect important seasonal elk calving habitat. **EXCEPTION:** This limitation does not apply to maintenance and operation of producing wells and range management. In addition, no surface-disturbing activity will be allowed on elk calving sites. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2).	•			
BIG GAME PRODUCTION TL CO ***All Surface-disturbing Activities***	**STIPULATION:** No surface use is allowed during the following time period(s) in big game production areas, as mapped in the Resource Management Plan, BLM's GIS database or other maps provided by local, state, federal or tribal agencies that are analyzed and accepted by the BLM: Prohibit activities, including motorized travel, in elk production areas from May 15 to June 15; in antelope production areas from April 15 to June 30; in Rocky Mountain bighorn sheep production areas from April 15 to June 30; in Moose production areas from April 15 to June 30; and in desert bighorn sheep production areas from February 1 to May 1. **On the following lands:** <LEGAL_DESCRIPTION> **PURPOSE:** To reduce disruption of big game during parturition and young rearing period. **EXCEPTION:** Standard exceptions apply (Section B.2). This stipulation only applies to construction and drilling, and does not apply to operations and maintenance. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation provides for protection of big game production areas from disturbance and displacement by human activities during critical periods.		•		

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] Protected Resource Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
TL-21 *(ROWA)* **Big Game Production Areas.** 13,100 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit activities, including motorized travel, in elk production areas from May 15 to June 15; in antelope production areas from April 15 to June 30; in Rocky Mountain bighorn sheep production areas from April 15 to June 30; in Moose production areas from April 15 to June 30; and in desert bighorn sheep production areas from February 1 to May 1. **PURPOSE:** To protect important seasonal big game production habitat, and reduce disruption of big game during parturition and young rearing period. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, this limitation does not apply to essential maintenance and operation of facilities (e.g. producing wells) and range administration (Section B.1). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation provides for protection of big game production areas from disturbance and displacement by human activities during critical periods.			•	
TL-22 *(ROWA)* **Pronghorn Wintering Habitat.** 23,500 acres ***All Surface-disturbing Activities***	**STIPULATION:** Prohibit surface occupancy and use, surface-disturbing activities, and intensive human activities in pronghorn wintering habitat from January 1 to March 31. **PURPOSE:** To improve pronghorn antelope habitat. **EXCEPTION:** Standard exceptions apply (Section B.2). In addition, this limitation does not apply to essential maintenance and operation of facilities (e.g. producing wells) and range administration (Section B.1). **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** Standard waivers apply (Section B.2). **JUSTIFICATION:** This stipulation is necessary to protect pronghorn winter habitat from surface-disturbing and major human activities during the periods of the year when the habitat is occupied. This habitat is critical to the viability of pronghorn herds. These areas will be managed by BLM to reflect CPW most current pronghorn winter range maps.	•	•	•	•

Table B-7
Timing Limitation (TL) Stipulations Applicable to
Fluid Mineral Leasing and Other Surface-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	Wild Horses				
TL-10 (ROWA) (BLM 1987) **Wild Horse Winter Range.** ***Fluid Minerals Only***	**STIPULATION:** Lease activities such as exploration, drilling, and other development (for fluid minerals only) will be allowed only during the period from May 1 to December 1 on the following portions of this lease: <LEGAL_DESCRIPTION>. **PURPOSE:** To protect important wild horse habitat. **EXCEPTION:** This limitation does not apply to maintenance and operation of producing wells and range management. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concerns(s) identified.	•			
TL-11 (ROWA) (BLM 1987) **TL-23** **Wild Horse Foaling Area.** ***Alternative A: Fluid Minerals Only*** ***Alternative D: All Surface-disturbing Activities***	**STIPULATION:** Lease activities such as exploration, drilling, and other development will be allowed only during the period from July 1 to March 1 on the following portions of this lease: <LEGAL_DESCRIPTION>. **PURPOSE:** To protect important seasonal wild horse habitat. **EXCEPTION:** This limitation does not apply to maintenance and operation of producing wells and range management. **MODIFICATION:** Standard modifications apply (Section B.2). **WAIVER:** This stipulation may be waived or reduced in scope if circumstances change or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concerns(s) identified.	•			•

[1]Existing stipulations currently in effect in Alternative A, current management, are noted in italics and are from the current RMP (BLM 1987).

Table B-8
Lease Notices (LN) and Additional Required Conditions of Approval
Applicable to Authorized Ground-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] Protected Resource Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	Air Resources				
CO-56 **Air Resources.**	This lease notice is attached to new oil and gas leasing agreements to provide notice to operators of analysis and mitigation requirements that would be determined on a case by case basis at the permitting/development stage.		•		
	Water Resources				
LN-17 **Palisade Municipal Watershed.**	This lease contains privately owned surface of the Town of Palisade that is within the Town's designated municipal watershed and is covered by a Watershed Protection Ordinance. This applies to the lands described below: <LEGAL_DESCRIPTIONS>.	•			
LN-1 **Source Water Protection Areas.**	The lease is within source water protection areas, and the lessee is required to implement special protective measures for water resources and to collaborate with municipalities and comply with applicable municipal watershed plans. **JUSTIFICATION:** This lease notification is necessary because leases within source water protection areas require extensive protection measures to ensure protection of water quality and human health.		•		
LN-2 **Municipal Watersheds and Source Water Protection Areas.**	The lease is within a municipal watershed or source water protection area, and the lessee is required to implement special protective measures for water resources and to collaborate with municipalities and comply with applicable municipal watershed plans. **JUSTIFICATION:** This lease notification is necessary because leases within municipal watersheds and source water protection areas require extensive protection measures to ensure protection of water quality and human health.				•
	Special Status Species				
LN-13 *(BLM 1987)* **Threatened and Endangered Species Habitat.**	The lessee/operator is required to submit to the BLM's Authorized Officer a plan for avoidance or mitigation of impacts on the identified species. This may require completion of an intensive inventory by a qualified biologist. The plan must be approved prior to any surface disturbance. The Authorized Officer may require additional mitigation measures, such as relocation of proposed roads, drilling sites, or other facilities.	•			

Table B-8
Lease Notices (LN) and Additional Required Conditions of Approval
Applicable to Authorized Ground-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] / Protected Resource / Acres/Miles Affected	Stipulation Description	Alternative A	B	C	D
	Where impacts cannot be mitigated to the satisfaction of the BLM's Authorized Officer, surface occupancy and use on that area is prohibited. • Black-footed ferret *(Exhibit GJ-13EC)*; • Spineless hedgehog cactus *(Exhibit GJ-13ED)*; and • Colorado hookless cactus (formerly Uinta Basin hookless cactus) *(Exhibit GJ-13EE)*.				
LN-3 **Biological Inventories.**	The operator is required to conduct a biological inventory prior to approval of operations in areas of known or suspected habitat of special status species, or habitat of other species of interest such as but not limited to raptor nests, sage-grouse leks, or significant natural plant communities. The operator, in coordination with the BLM, shall use the inventory to prepare mitigating measures to reduce the impacts on affected species or their habitats. These mitigating measures may include, but are not limited to, relocation of roads and other facilities and fencing operations or habitat. Where impacts cannot be mitigated to the satisfaction of the BLM's Authorized Officer, surface occupancy and use on that area is prohibited. **JUSTIFICATION:** This lease notice is necessary to identify current plant and animal populations in order to reduce or avoid impacts to those species.	•	•	•	
LN-4 **Threatened and Endangered Species (Alternative B) / Colorado Hookless Cactus (Alternatives C and D)**	Alternative B: ***Threatened and Endangered Species*** This lease contains habitat for threatened and endangered species. Prior to undertaking any activity on the lease, including surveying and staking of well locations, the lessee may be required to perform botanical inventories on the lease. Special design and construction measures may also be required in order to minimize impacts to threatened and endangered species habitat from drilling and producing operations. This applies to the lands described below: <LEGAL_DESCRIPTIONS>. Alternatives C and D: ***Colorado Hookless Cactus*** This lease contains habitat for the Colorado hookless cactus *(Sclerocactus glaucus)*. Prior to undertaking any activity on the lease, including surveying and staking of well locations, the lessee may be required to perform botanical inventories on the	•	•	•	

Table B-8
Lease Notices (LN) and Additional Required Conditions of Approval
Applicable to Authorized Ground-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	**Stipulation Description**	**Alternative**			
		A	**B**	**C**	**D**
	lease. Special design and construction measures may also be required in order to minimize impacts to Colorado hookless cactus habitat from drilling and producing operations. **EXCEPTION:** An exception may be granted depending on current usage of the site or on the geographical relationship to topographic barriers and vegetation screening. **MODIFICATION:** Changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.) **JUSTIFICATION:** This lease notice is necessary to identify current cactus populations and habitat in order to reduce or avoid impacts to cactus habitat.				
	Fish and Wildlife				
LN-3 **Biological Inventories.**	The operator is required to conduct a biological inventory prior to approval of operations in areas of known or suspected habitat of special status species, or habitat of other species of interest such as but not limited to raptor nests, sage-grouse leks, or significant natural plant communities. The operator, in coordination with the BLM, shall use the inventory to prepare mitigating measures to reduce the impacts on affected species or their habitats. These mitigating measures may include, but are not limited to, relocation of roads and other facilities and fencing operations or habitat. Where impacts cannot be mitigated to the satisfaction of the BLM's Authorized Officer, surface occupancy and use on that area is prohibited. **JUSTIFICATION:** This lease notice is necessary to identify current plant and animal populations in order to reduce or avoid impacts to those species.		•	•	•
LN-5 **Working in Wildlife Habitat.**	Require operators to establish and submit to the GJFO a set of operating procedures for employees and contractors working in important wildlife habitats. Design such procedures to inform employees and contractors of ways to minimize the effect of their presence on wildlife and wildlife habitats. Procedures may address, but are not limited to, items such as working in bear		•	•	

Table B-8
Lease Notices (LN) and Additional Required Conditions of Approval
Applicable to Authorized Ground-disturbing Activities

Stipulation Number (*Existing*/**New**)[1] **Protected Resource** **Acres/Miles Affected**	Stipulation Description	Alternative A	B	C	D
	or snake country, controlling dogs, and understanding and abiding by hunting and firearms regulations.				
	Paleontological Resources				
LN-6 **Class 4 and 5 Paleontological Areas.**	Have a permitted paleontologist approved by the Authorized Officer perform an inventory of surface-disturbing activities in Class 4 and 5 paleontological areas per Instruction Memorandum No. 2008-009: Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands. **JUSTIFICATION:** This lease notice is necessary to ensure an adequate paleontologist is present during surface disturbing activities to protect paleontological resources from direct impacts.	•	•	•	•
	Lands and Realty				
LN-16/**LN-7** **Powderhorn Ski Area.**	If drilling operations are proposed, the lessee is hereby notified that there are concerns about ski lift structures, other facilities, and ski runs within the Powderhorn ski area. The lessee is hereby notified that special design, construction, and scheduling measures may be required in order to minimize the impacts of drilling and production operations. Proposed drilling and production facilities and operations will be relocated and rescheduled as needed to avoid physical interference with ski area facilities and recreation use. This can include relocations of more than 200 meters (656 feet) or seasonal closures of more than 60 days. This applies to the lands described below: <LEGAL_DESCRIPTIONS>. **JUSTIFICATION:** This lease notification is necessary to protect recreation facilities at Powderhorn Ski Area.	•	•		•

[1]Existing stipulations currently in effect in Alternative A, current management, are noted in italics and are from the current RMP (BLM 1987). Proposed new stipulations under Alternatives B, C, and/or D are noted in bold-face, non-italics.

APPENDIX H
BEST MANAGEMENT PRACTICES AND STANDARD OPERATING PROCEDURES

INTRODUCTION

This appendix provides a list of common standard operating procedures (SOPs) and best management practices (BMPs) that are applicable to all alternatives in the resource management plan. Standard operating procedures are established guidelines that are followed by the BLM in carrying out management activities. While the list of standard operating procedures is complete, the list is not intended to be comprehensive; additional standard operating procedures could be developed and implemented to support achieving resource objectives.

Best management practices are state-of-the-art mitigation measures applied on a site-specific basis to avoid, minimize, reduce, rectify, or compensate for adverse environmental or social impacts. They are applied to management actions to aid in achieving desired outcomes for safe, environmentally responsible resource development, by preventing, minimizing, or mitigating adverse impacts and reducing conflicts. Best management practices can also be proposed by project applicants for activities on public lands (e.g., for gas drilling). Best management practices not incorporated into the permit application by the applicant may be considered and evaluated through the environmental review process and incorporated into the use authorization as conditions of approval or stipulations. Standard conditions of approval and stipulations are also provided in this appendix as appropriate. Additional best management practices, conditions of approval, and stipulations could be developed to meet resource objectives based on local conditions and resource specific concerns.

Master Leasing Plan

BMPs and SOPs that will be analyzed at the development stage and may be applied consistent with environmental analysis and existing lease rights are denoted by "**(MLP)**" in this appendix.

AIR QUALITY (A)

Air quality standards are governed by the Clean Air Act of 1990 (as amended) (42 United States [US] Code Chapter 85). The US Environmental Protection Agency is charged with setting National Ambient Air Quality Standards, currently found at http://www.epa.gov/air/criteria.html (US Environmental Protection Agency 2009). At the state level, the Colorado Department of Public Health and Environment has established its standards (Colorado Department of Public Health and Environment 2009).

Standard Operating Procedures

A-1: The BLM has the authority and responsibility under the Federal Land Policy and Management Act to manage public lands in a manner that will protect the quality of air and atmospheric values. Therefore, the BLM may manage the pace, place, density, and intensity of leasing and development to meet air quality goals.

A-2: The proponent of a project will be required to minimize air pollutant emissions by complying with all applicable state and federal regulations (including application of best available control technology) and may be required to apply mitigation including but not limited to best management practices, and other control technologies or strategies identified by the BLM or CDPHE in accordance with delegated regulatory authority.

Best Management Practices

A-3: The BLM may require project proponents for oil and gas development projects to conduct pre-construction air monitoring within or adjacent to the proposed development area. The purpose of this monitoring is to establish baseline air quality conditions prior to development at the site. The requirement for monitoring will be determined by BLM based on the absence of existing monitoring; existing air quality conditions; magnitude of potential air emissions from the project or activity; magnitude of existing emission sources in the area; proximity to a federally mandated Class I area, sensitive Class II area, or population center; location within a non-attainment or maintenance area; meteorological or geographic conditions; project duration; or issues identified during project scoping. The project proponent will be required to provide a minimum of one year of baseline ambient air monitoring data for any pollutant(s) of concern as determined by BLM. If BLM determines that baseline monitoring is required, this pre-analysis data must meet CDPHE air monitoring standards, be obtained from a site within 50 km of the project boundary, and cover the year immediately prior to the proposed project submittal. The project proponent will be responsible for siting, installing, operating, and maintaining any required air monitoring.

A-4: The BLM may require project proponents for oil and gas development projects to conduct air monitoring for the life of the oil and gas development project depending on the magnitude of potential air emissions from the project or activity, proximity to a federally mandated Class I area, sensitive Class II area,

or population center, location within a non-attainment or maintenance area, meteorological or geographic conditions, existing air quality conditions, magnitude of existing development in the area, or issues identified during project scoping. The purpose of this air monitoring is to determine impacts attributable to the project over time. The project proponent will be responsible for siting, installing, operating, and maintaining any required air monitoring.

A-5: The BLM may require a project proponent to conduct air quality modeling for any pollutant(s) of concern in the absence of sufficient data to ensure compliance with laws and regulations or to determine the effectiveness of mitigation options, unless the project proponent can demonstrate that the project will result in no net increase in emissions of the pollutant(s) of concern. The requirement for modeling will be based on existing air quality conditions; magnitude of potential air emissions from the project or activity; magnitude of existing emission sources in the area; proximity to a federally mandated Class I area, sensitive Class II area, an area expected to exceed a NAAQs or PDS increment, population center, location within a non-attainment or maintenance area; meteorological or geographic conditions; project duration; or issues identified during project scoping. The BLM, in cooperation with an interagency review team, will determine the parameters for the modeling analysis through the development of a project specific modeling protocol.

A-6: The BLM may require project proponents for oil and gas development projects to submit a contingency plan that provides for reduced operations in the event of an air quality episode. Specific operations and pollutants to be addressed in the contingency plan will be determined by the BLM on a case-by-case basis taking into account existing air quality and pollutants emitted by the project.

A-7: Implement directional drilling techniques to reduce construction related emissions (dust and vehicle and construction equipment emissions).

A-8: **(MLP)** Improve engine technology (Tier 2 or better) for diesel drill rig engines to reduce NOx, PM, CO, and VOC emissions.

A-9: Utilize natural gas fired drill rig engines to reduce NOx emissions and reduce formation of visibility impairing compounds and ozone.

A-10: Improve engine technology (Tier 2 or better) for all mobile and non-road diesel engines to reduce NOx, PM, CO, and VOC emissions.

A-11: Utilize "Green completion" (a.k.a. closed loop or flareless) technology to reduce VOC and CH4 emissions. This would also reduce or eliminate open pits and associated evaporative emissions.

A-12: Utilize "Green workovers" to reduce VOC and CH4 emissions. This would also reduce or eliminate open pits and associated evaporative emissions.

A-13: Eliminate evaporation pits for drilling fluids to reduce VOC and GHG emissions.

A-14: Electrification of wellhead compression/pumping to reduce local emissions of fossil fuel combustion and transfers to a more easily controlled source.

A-15: Utilize renewable power sources to provide energy for compressors, monitoring equipment, or pumps.

A-16: Replace wet compressor seals with dry seals or use mechanical seals to reduce gas venting (VOC and GHG emissions).

A-17: Centralize or consolidate gas processing facilities, liquids gathering systems (condensate and produced water), water and/or fracturing liquids delivery systems, to reduce VOC and GHG emissions from individual dehydration/separator units and to reduce vehicle emissions.

A-18: Eliminate the use of open top tanks to reduce VOC and GHG emissions.

A-19: Improve capture and control of flashing emissions from all storage tanks and separation vessels with vapor recovery and/or thermal combustion units.

A-20: Improve capture and control of produced water, crude oil, and condensate tank emissions to reduce VOC and GHG emissions.

A-21: Improve capture and control of dehydration equipment emissions with condensers, vapor recovery, and/or thermal combustion to reduce VOC, HAP, and GHG emissions.

A-22: Use zero emissions dehydrators or use desiccants dehydrators to reduce VOC, HAP, and GHG emissions.

A-23: Reduce miscellaneous fugitive VOC emissions by

- **a)** Installing plunger lift systems to reduce well blow downs
- **b)** Install and maintain low VOC emitting seals, valves, and hatches on production equipment.
- **c)** Initiate equipment leak detection and repair program (e.g., including use of FLIR infrared cameras, grab samples, organic vapor detection devices, and/or visual inspection).
- **d)** Install or convert Gas operated pneumatic devices to electric, solar, or instrument (or compressed) air driven devices/controllers.
- **e)** Use "low" or "no bleed" gas operated pneumatic devices/controllers.

f) Use closed loop system or thermal combustion for gas operated pneumatic pump emissions.

g) Install or convert gas operated pneumatic pumps to electric, solar, or instrument (or compressed) air driven pumps.

h) Install vapor recovery on truck loading/unloading operations at tanks.

A-24: Utilize dust suppression techniques on unpaved surfaces including watering, chemical suppressants, and gravel.

A-25: Utilize remote telemetry and automation of wellhead equipment to reduce vehicle traffic and associated emissions.

A-26: Post and enforce speed limits to reduce air borne fugitive dust from vehicular traffic on unpaved roads.

A-27: Reduce commuter vehicle trips through car pools, commuter vans or buses, innovative work schedules, or work camps.

A-28: Use ultra-low sulfur diesel (e.g. in engines, compressors, construction equipment) to reduce emissions of particulates and sulfates.

A-29: Utilize best available technology and methods to degasify coal seams prior to mining. Capture methane gas from coal seams to obtain a market income. Modify methane drainage over time to ensure capture is optimal.

A-30: Reduce unnecessary vehicle idling to reduce combustion emissions, ozone formation, visibility impacts, and fuel consumption.

A-31: Reduce the pace of (phased) development to reduce the peak emissions of all pollutants.

A-32: Restrict surface disturbing activities to periods when wind speeds are less than 25 mph.

A-33: Keep soil and coal refuse moist while loading into dump trucks.

A-34: Keep soil and coal refuse loads below the freeboard of the truck.

A-35: Minimize drop heights when loaders dump soil and coal refuse into trucks.

A-36: Tighten gate seals on dump trucks.

A-37: Cover dump trucks before traveling on public roads.

A-38: Cover construction materials, stockpiled soils, and stockpiled coal refuse if they are a source of fugitive dust.

A-39: Train workers to handle construction materials and debris to reduce fugitive emissions.

A-40: Employ water injection or rotoclones on all overburden drills.

A-41: Use chutes, drapes, or other means to enclose conveyor transfer points, screens, and crushers; cover all conveyors.

A-42: Suppress and extinguish spoil and coal fires as soon as is reasonable and safely possible.

References

Colorado Department of Public Health and Environment. 2011. Air Quality Control Commission Regulations. Internet Web site: http://www.cdphe.state.co.us/regulations/airregs. Accessed on May 21, 2011.

Bureau of Land Management. 2009. Air Quality BMPs-Best Management Practices for Fluid Minerals. Updated 8-24-2009. Internet Web site: www.blm.gov/bmp.

US Environmental Protection Agency. 2009. National Ambient Air Quality Standards. Internet Web site: http://www.epa.gov/air/criteria.html. Accessed on October 14, 2009.

SOILS (S)

Standard Operating Procedures

S-1: All routes shall be built and maintained to BLM Manual Section 9113 standards for road shape and drainage features (BLM 2011a) or where appropriate BLM Manual Section 9115 standards for primitive roads (BLM 2012). For drainage crossings, culverts should be sized for the 50 year storm event with no static head and to pass a 100-year event without failing. Site specific conditions may warrant BLM to require designs for larger events (e.g. 75-100 year storm events). Large culverts and bridges shall be designed and constructed per BLM Manual 9112 (large culverts and bridges) (BLM 2009). Large culverts and bridges shall be designed to pass a 100-year storm event (minimum).

S-2: When saturated soil conditions existing on access roads or location, or when road rutting becomes deeper than 3 inches, construction shall be halted until soil material dries out or is frozen sufficiently for construction to proceed without undue damage and erosion to soils, roads and locations.

S-3: Topsoil shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or in a condition that may otherwise be detrimental to proper grading or proposed sodding or seeding.

S-4: Topsoil shall only be used for reclamation and shall not be used as fill or to bed or pad the pipe during backfilling.

S-5: Topsoil stripping will include all growth medium present at a site (following initial clearing of large trees, etc.), as indicated by color or texture. Stripping and storage depth may be specified during the onsite inspection. All stripped topsoil/growth medium will be salvaged, segregated and stored in a manner that extends biological viability and protects it from loss. Topsoil and all growth medium will be replaced prior to seedbed preparation. No topsoil will be stripped or segregated when soils are saturated or frozen below the stripping depth.

S-6: A Winter Construction Plan will be submitted and approved by the BLM Authorized Officer before a Notice to Proceed will be authorized for construction activities in frozen soils.

S-7: Prohibit placing fill on a frozen foundation.

S-8: Slopes shall not be created so close to property lines as to endanger adjoining properties without adequate protection against sedimentation, erosion, slippage, settlement, subsidence or other related damages.

S-9: Surface disturbing actions will be sensitive to natural resource protection. When surface disturbance in sensitive areas is unavoidable, they will be minimized to the greatest extent practicable, especially near drainage features and on soils mapped as being saline (see Glossary).

S-10: Surface disturbing actions associated with development of fluid minerals will follow Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (commonly referred to as The Gold Book)(BLM 2007b).

S-11: As detailed in the site plan for surface water management, drainage from disturbed areas will be confined or directed to minimize erosion, particularly within 100 feet of all drainages. No runoff, including that from roads, will be allowed to flow into intermittent or perennial waterways without first passing through sediment-trapping mechanisms such as vegetation, anchored bales or catchments.

S-12: Standard secondary containment shall hold 110 percent of the capacity the largest single tank it contains and be impervious to any oil, glycol, produced water, or other toxic fluid for 72 hours. Earthen berms must be compacted and of fine material that will prevent seepage of any spill to surrounding area.

S-13: All tanks with a capacity of ten (10) barrels or greater shall be labeled or posted with the following information: A. Name of operator; B. Operator's emergency contact telephone number; C. Tank capacity; D. Tank contents; and E. National Fire Protection Association (NFPA) Label. Smaller chemical storage shall be labeled with contents and NFPA label.

S-14: Interim and final reclamation procedures shall utilize best available science and technology to protect natural resources from undue degradation.

S-15: Use BLM-GJFO Trail Design Criteria along with BLM Manual handbooks 9113-2 (Roads National Inventory & Condition Assessment Guidance & Instructions) and 9115-2 (Primitive Roads National Inventory & Condition Assessment Guidance & Instructions) to evaluate road conditions for maintenance and mitigation.

Best Management Practices

S-16: To limit surface disturbance and associated impacts to natural resources, all actions will consider the character of the topography and landform. Deep vertical cuts, long or steep fill slopes and side cuts across steep slopes will be avoided. Rights-of-way will be shared, and structures and facilities will be grouped.

S-17: Consider site specific soil and vegetative characteristics and reclamation potential in project design and layout.

S-18: Native vegetation and soils will be protected and disturbance to them will be minimized.

S-19: Cleared vegetation smaller than four inches in diameter will be stockpiled, shredded, and salvaged with topsoil. Cleared vegetation larger than four inches in diameter will be scattered over disturbed areas to accomplish reclamation objectives. Excessive vegetation larger than four inches in diameter may be removed from public land or shredded in place to be salvaged with topsoil. A wood cutting permit may be purchased from BLM for material removed from the site.

S-20: Windrowing of Topsoil. [Use where appropriate based on topography – may not be appropriate for pads in steep areas or where pad size should be minimized.] Topsoil shall be windrowed around the perimeter of surface disturbance to create a berm that limits and redirects stormwater runoff and extends the viability of the topsoil per BLM Topsoil Best Management Practices (BLM 2009 PowerPoint presentation available upon request from the Grand Junction Field Office). Topsoil shall also be windrowed, segregated, and stored along disturbed surfaces or linear features for later spreading across the disturbed corridor during final reclamation. Topsoil berms shall be promptly seeded to maintain soil microbial activity, reduce erosion, and minimize weed establishment.

S-21: Where applicable, entrances to construction locations will be covered by gravel "track pads" to prevent sediment and weed seeds from being tracked in and out of the site.

S-22: In areas where all weather access is necessary, the operator would construct and maintain all-weather routes per BLM Manual Section 9113 standards. Graveling or other appropriate surfacing material would be required to reduce environmental resource damage and provide safe all-weather access.

S-23: Specialized low surface impact equipment (wide- or balloon-tired vehicles, all-terrain vehicles) or helicopters may be used for activities in off-road areas to protect fragile soils and or other resource values.

S-24: Standard secondary containment shall include a study corrugated metal wall to create a basin, be lined with a heavy impervious poly liner and be protected with a gravel surface. Small plastic hoppers shall be installed at all loadout connections to catch drips and small leaks.

References

BLM. 2009. H-9112-1 Bridges and Major Culverts Handbook. Bureau of Land Management, Washington, D.C.

BLM. 2011a. H-9113-1 Road Design Handbook. Bureau of Land Management, Washington, D.C.

BLM. 2012g. H-9115 Primitive Roads Manual. Bureau of Land Management, Washington, D.C.

United States Department of the Interior and United States Department of Agriculture. 2007. Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development. BLM/WO/ST-06/021+3071/REV 07. Bureau of Land Management. Denver, Colorado. 84 pp.

WATER RESOURCES (H)

Standard Operating Procedures

H-1: The operator/permittee shall adhere to all requirements under the Federal Water Pollution Control Act, as amended through P.L. 107-303, November 27, 2002.

H-2: For surface disturbing activities exceeding one acre in size, develop and implement Stormwater Pollution Prevention Plans to include site-specific design, systematic site monitoring, installation of run-on/off controls such as ditches or berms and installation of adaptive BMPs to reduce potential erosion and sediment production and transport. Stormwater will be dispersed to stabilized areas to slow velocity, prevent erosion and support infiltration into soils.

Stormwater BMPs identified in the State approved Storm Water Pollution Prevention Plan shall be in place prior to any earth-disturbing activity. Additional BMPs will be installed if determined necessary by the BLM. All measures shall be maintained in good, functional condition. All temporary BMPs shall be removed once site stabilization and reclamation efforts have been deemed successful by the BLM.

H-3: For actions requiring individual permits through the US Army Corps of Engineers, require a licensed Professional Engineer to approve and stamp the project design, construction, and reclamation plans to mitigate to the fullest extent practicable riparian resource damage associated with the proposed action.

H-4: Spoil material from clearing, grubbing, and channel excavation shall be disposed of in a manner that will not interfere with the function of the channel and in accordance with all local, state, and federal laws and regulations.

H-5: Surface disturbing actions associated with development of fluid minerals will follow Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (commonly referred to as The Gold Book BLM 2007b).

H-6: Before activities take place, every pad, access road, or facility site will have an approved surface drainage plan for establishing positive management of surface water drainage, to reduce erosion and sediment transport. The drainage plan will include adaptive BMPs, monitoring, maintenance and reporting. BMPs may include run-on/run-off controls such as surface pocking or re-vegetation, ditches or berms, basins, and other control methods to reduce erosion. Pre-construction drainage BMPs will be installed as appropriate.

H-7: The operator will reduce potential for contaminating water resources where spills of drilling fluids are most vulnerable. Areas of vulnerability will include a 0.25-mile buffer around the following: mapped alluvial, colluvial, and glacial deposits; springs and perennial water sources, Source Water Protection Areas, and Municipal Watersheds). In these areas, the operator will:

a) Utilize closed loop drilling systems.

b) Utilize gas-blocker additives during the cementing process.

c) Contain flowback and stimulation fluids in tanks on well pad with secondary containment mats/blankets (or equivalent).

d) Install containment devices beneath and around crude oil, condensate and produced water storage tanks.

e) Collect baseline water quality data from downstream fresh water sources prior to drilling, mining, or storage of potentially harmful substances. Parameters to be analyzed will be determined on a site

specific basis based on the nature of the proposed action. The operator will be responsible for submitting a list of parameters to BLM for approval prior to sampling.

f) Provide notification of potentially impacted Public Water Systems 15 miles downstream.

g) Develop an emergency spill and response program to be reviewed and approved by BLM prior to surface-disturbing activities.

H-8: Protection of drinking water supply sources within surface water supply areas (leased or made available for leasing) will concur with Colorado Oil and Gas Conservation Commission rule 317B and subsequent updates.

H-9: All routes shall be built and maintained to BLM Manual Section 9113 standards for road shape and drainage features (BLM 2011a) or where appropriate BLM Manual Section 9115 standards for primitive roads (BLM 2012b). For drainage crossings, culverts should be sized for the 50 year storm event with no static head and to pass a 100-year event without failing. Site specific conditions may warrant BLM to require designs for larger events (e.g. 75-100 year storm events). Large culverts and bridges shall be designed and constructed per BLM Manual 9112 (large culverts and bridges) (BLM 2009). Large culverts and bridges shall be designed to pass a 100-year storm event (minimum).

H-10: Erosion control features shall be maintained through periodic inspection and maintenance, including cleaning dips and cross-drains, repairing ditches, marking culvert inlets to aid in location, and clearing debris from culverts.

H-11: Surface discharges shall comply with all regulatory requirements outlined in the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act), as amended through P.L. 107-303, November 27, 2002 Clean Water Act. Additionally, surface discharges should be made to well defined channels away from major erosional features. Furthermore, discharges should be limited to a volume less than or equal to the naturally occurring mean annual peak flow (which is roughly equivalent to a peak generated by a 2-year 24-hour storm event) and that can be handled by the natural channel under anticipated conditions.

H-12: To protect water quality, anti-backflow devices shall be utilized while drafting fresh water from streams, springs, reservoirs and wells.

H-13: Range improvements will conform to BLM Manual H 1740-2 and subsequent updates (BLM 2008).

H-14: Discharge of surface and groundwater to surface drainages will comply with the Federal Water Pollution Control Act (as amended through P.L. 107–

303, November 27, 2002) and will be pre-approved by BLM and will meet the following criteria:

a) Discharge operations will not negatively impact downstream beneficial uses.

b) Discharge soil/water interactions will not facilitate the movement of water quality contaminants [e.g., salt, selenium (typically associated with Mancos shale derived soils), sediment, metals] above natural rates in surface and/or groundwater.

c) Water discharge shall be limited to well-defined major channels, to reduce potential of discharged water dissolving and transporting salts from the stream channel and to reduce concentration of salts in alluvium.

d) Discharges will be limited to a volume that can be handled by the natural channel and less than or equal to the naturally occurring mean annual peak flow (roughly equivalent to a two-year, 24-hour storm peak).

e) Discharge points will be located in stable channels or reservoirs away from any downstream head-cuts or other major erosional features (as determined by BLM). Outfall design may include discharge aprons and downstream stabilization of channel side slopes to prevent erosion and provide energy dissipation.

f) Subject to BLM approval, water quality thresholds for both surface and groundwater will be set and monitored during discharge operations in order that they will cease if thresholds were exceeded.

g) Surface and groundwater quantity and quality will be monitored during all discharge operations. Monitoring locations will be subject to BLM approval. Monitoring activities will continue for at least two water years following cessation of discharge.

H-15: Hazardous substances will not be used in drilling, testing, or completion operations, nor introduced at any time into the reserve or cuttings pit. Fluids will be confined to pits or tanks and all pits that may contain liquids will be lined to protect groundwater. Liners will be maintained in good condition, with no tears or holes, until they are removed when the reserve pit is closed.

H-16: Pits will be constructed so that water will not run into them. Fluid levels will be maintained below 2 feet of the lowest point of containment.

H-17: Interim and final reclamation procedures shall utilize best available science and technology to protect natural resources from undue degradation.

Best Management Practices

H-18: **(MLP)** To limit surface disturbance and associated impacts to natural resources, all actions will consider the character of the topography and landform. Deep vertical cuts, long or steep fill slopes and side cuts across steep slopes will be avoided. Rights-of-way will be shared, and structures and facilities will be grouped.

H-19: Provide energy dissipaters (e.g., rock piles and logs) where necessary at the downstream end of ditch relief culverts to reduce the erosion energy of the emerging water.

H-20: The face of cut or fill slopes shall not be subject to any concentrated flows of surface water such as from natural drainage ways, graded swales, and downspouts.

H-21: Provide subsurface drainage where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.

H-22: Grade road surfaces only as often as necessary to maintain a stable running surface and to retain the original surface drainage.

H-23: Avoid cutting the toe of cut slopes when grading roads or pulling ditches.

H-24: The operator will be responsible for keeping road inlet and outlet ditches, catch-basins, and culverts free of obstructions, particularly before and during spring runoff. Routine machine-cleaning of ditches shall be kept to a minimum during wet weather. Leave the disturbed area in a condition that provides drainage with no additional maintenance.

H-25: Remove all temporary stream crossings immediately after use and cross-ditch the ends of routes or rights-of-way to mitigate erosion from disturbed areas.

H-26: When designing protective/mitigation measures, consider the changes that may occur in the watershed hydrology and sedimentation over the design life of the measure. Moreover, design and construct roads that are self-maintaining and consider using road surfacing, such as gravel when year-long access may be necessary.

H-27: Design and construct stream crossings at right angles, in straight sections of stable reaches to handle (at a minimum) the 100-year flood, and consider culvert and bridge designs that facilitate aquatic life passage.

H-28: Where the access road crosses small drainages and intermittent streams not requiring culverts, low water crossings shall be used. The road will dip to the original streambed elevation of the drainage and the crossing will prevent

any blockage or restriction of the existing channel. Material moved from the banks of the crossing will be stockpiled nearby for later use in reclamation. Gravel, riprap, or concrete bottoms may be required in some situations.

H-29: For pipeline crossings of drainage ways: Pipelines crossing at the surface must be constructed high enough to remain above the highest possible floodflows at each crossing. Pipeline crossings below the surface must be buried deep enough to remain undisturbed by scour and fill processes typically associated with passage of peak flows. A hydraulic analysis should be completed during the pipeline design phase to avoid repeated maintenance of such crossings and eliminate costly repairs and potential environmental degradation associated with pipeline breaks at stream crossings (DOI 2007). Utilize horizontal directional boring techniques under perennial water bodies and/or wetland complexes when environmental circumstances allow.

H-30: Minimize crossing of streams (intermittent and perennial) and wetlands with vehicles and heavy machinery.

H-31: Time work in wetlands and watercourses to occur during low flow season when conditions are driest. High flows occur during late summer early fall as a result of high intensity convective thunderstorm events. Work in these areas must also be done in a manner consistent with BMPs for biological resources.

H-32: Exclude livestock and vehicles from spring sources and riparian areas where on-site evaluation and/or monitoring data indicate degrading conditions or potential to degrade spring or riparian function.

H-33: Avoid alteration of natural hydrologic function and condition in source areas for springs, seeps, fens, or other water developments. Relocate surface-disturbing activities away from these sensitive areas as site conditions warrant.

H-34: Limit consumptive water use from Federal point source water rights on public lands that are not sustainable and/or would jeopardize discharge to streams, springs, seeps, fens, or downstream senior water rights.

H-35: Manage and manipulate invasive stands of brush and weeds on forest, range, pasture land by mechanical, chemical, or biological means or by prescribed burning to improve watershed function and condition.

H-36: Limit surface disturbance near drainage features and minimize surface disturbance on steep slopes, fragile soils, saline soils, and Mancos shale derived soils.

H-37: When activity in streams, wetlands, or riparian areas is unavoidable, the operator will first employ best available technology such as eco-Matting to reduce impacts. The operator would then restore modified or damaged areas

as close as practicable to natural conditions to protect banks, wetlands and to re-establish riparian vegetation.

H-38: Maintain to the greatest extent practicable natural flow rates and chemical and physical properties of surface and groundwater during work within stream channels, floodplains, and/or riparian areas.

H-39: Oil and gas drilling operations within municipal watersheds, source water protection areas, or locally important fresh water aquifers should utilize methods and materials that will prevent degradation of the underlying groundwater. This may include practices such as surface and intermediate casing through potential fresh water zones, gas blocker additives to cement jobs, the use of green fracturing fluids, and pitless drilling - closed loop drilling. The use of "Green" fracturing fluids will be documented in the form of Material Safety Data Sheets which will be reviewed by the operator for compliance prior to use. Material Safety Data Sheets will remain on site at all times such chemicals are present.

H-40: Water from well production tests (water wells) or hydrostatic testing of pipelines shall be filtered of sediments prior to discharge into wetlands. Energy dissipating methods (e.g., straw-bails, waddles, vegetative buffers) shall be in place prior to discharge of production water or water used for hydrostatic testing.

H-41: Within portions of municipal watersheds and sourcewater protection areas available for fluid minerals development, the operator should develop and implement a watershed protection plan. This plan would include characterization and monitoring of baseline hydrologic/hydrogeologic conditions such as but not limited to: water quality, water quantity, groundwater flow patterns, connectivity between geologic formations, and communication between surface and groundwater. The operator should collaborate with all watershed stakeholders in development and implementation of the watershed protection plan.

H-42: Livestock feeding, and salting, shall be done in a manner to protect water quality. When possible, these developments or practices should be done at least 550 meters from riparian zones.

H-43: Maintain appropriate vegetative/riparian buffers around water features to slow runoff and trap sediments and protect water quality. A minimum buffer distance should be 200 meters or greater where site conditions warrant.

H-44: Surface disturbing actions should not permanently impair floodplain function.

H-45: No operations using chemical processes (except for vegetation management) or other pollutants in their activities will be allowed to occur

within 200 feet of any water bodies. This includes staging equipment for refueling, and equipment maintenance.

H-46: Fill material will not be cast over hilltops or into drainages.

H-47: All pipeline welds within 100 feet of a perennial stream will be x-rayed to prevent leakage into the stream. Where pipelines cross streams that support Federal or State-listed threatened or endangered species or BLM-listed sensitive species, additional safeguards such as double-walled pipe, and remotely-actuated block or check valves on both sides of the stream may be used.

H-48: Baseline information of channel characteristics and riparian vegetation present must be documented before actions are permitted to disturb riparian areas and the stream channel.

H-49: Direct overflow from water developments back to the original natural drainage in a way that does not accelerate erosion or modify riparian habitats.

H-50: Avoid soil compaction or surface disturbing activities in recharge areas that could impair natural function of springs and/or seeps.

References

Federal Water Pollution Control Act, as amended through P.L. 107-303, November 27, 2002

United States Department of the Interior and United States Department of Agriculture. 2007. Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development. BLM/WO/ST-06/021+3071/REV 07. Bureau of Land Management. Denver, Colorado. 84 pp.

BLM. 2009. H-9112-1 Bridges and Major Culverts Handbook. Bureau of Land Management, Washington, D.C.

BLM. 2011a. H-9113-1 Road Design Handbook. Bureau of Land Management, Washington, D.C.

BLM. 2012f. H-9115 Primitive Roads Manual. Bureau of Land Management, Washington, D.C.

BLM. 2008. H-1740-2 Integrated Vegetation Management Handbook. Bureau of Land Management, Washington, D.C. Internet Web site: http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.59510.File.dat/H-1740-2.pdf. Accessed on May 18, 2012.

U.S. Department of the Interior. 2007. Hydraulic considerations for pipelines crossing stream channels. Technical Note 423. BLM/ST/ST-

07/007+2880. Bureau of Land Management, National Science and Technology Center, Denver, CO. Internet Web site: http://www.blm.gov/nstc/library/techno2.htm. Accessed on May 18, 2012.

VEGETATION: RANGELAND (VR)

Guidance may come from various sources. See individual resources.

Standard Operating Procedures

VR-1: When making decisions about proposed projects/actions in known sagebrush habitat, existing plans and guidance will be used by interdisciplinary teams and considered in the decision making process. This guidance includes the conservation actions/guidelines identified in the Western Association of Fish and Wildlife Agencies – Conservation Assessment of Greater Sage-grouse and Sagebrush habitats (2004), and local working group population plans (Pinion Mesa population of Gunnison Sage Grouse and Parachute Piance Roan Population of Greater Sage Grouse).

VR-2: Utilize the techniques and methods for vegetation treatments identified in the Record of Decision for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2007).

Best Management Practices

VR-3: Close and rehabilitate roads quickly once they are no longer needed.

VR-4: Close selected routes to protect special status species and significant plant communities.

VR-5: Build roads to the appropriate standard, no higher than necessary for use and safety, and utilize primitive or two-track roads rather than newly constructed roads where feasible.

VR-6: Pipelines (and electrical power lines when possible) shall be placed within road corridors to minimize disturbance.

VR-7: Minimize disturbance to soil and native vegetation as much as possible.

VR-8: Stockpile topsoil for use in final reclamation. Topsoil shall be stored separately from other fill materials.

VR-9: When timely natural regeneration of the native plant community is not likely to occur, carefully select species that will not compete with or exclude botanical resources for revegetation efforts. Bare sites shall be seeded as soon as appropriate to prevent establishment of undesirable plant species.

VR-10: Ensure that seed used for revegetation as well as straw and hay bales used for erosion control are certified free of noxious weeds.

VR-11: Monitor revegetation sites to ensure successful establishment of desired species.

VR-12: Monitor the long-term success of revegetation efforts to ensure successful establishment of desired species and detect any noxious weed infestations. If revegetation is unsuccessful, continue efforts to establish desired species in disturbed sites.

VR-13: In Salt Desert Shrub communities with biological soil crusts, require reclamation that includes but is not limited to: broadcasting bacterial inoculants, planting native grass, forbs, and shrubs seedlings, and exclosure fences.

References

BLM (US Department of Interior, Bureau of Land Management). 2007. Final Vegetation Treatment Using Herbicides on Bureau of Land Management Lands in 17 Western States, Programmatic Environmental Impact Statement. BLM, Nevada State Office, Reno, NV. June 2007.

Connelly, J.W., S.T. Knick, M.A. Schroeder, and S.J. Stiver. 2004. Conservation Assessment of Greater Sage-grouse and Sagebrush Habitat. Western Association of Fish and Wildlife Agencies. Unpublished Report. Cheyenne, Wyoming.

Elliott, B.A., S. Spackman Panjabi, B. Kurzel, B. Neely, R. Rondeau, and M. Ewing. 2009. Recommended Best Management Practices for Plants of Concern. Practices developed to reduce the impacts of oil and gas development activities to plants of concern. Unpublished report prepared by the Rare Plant Conservation Initiative for the National Fish and Wildlife Foundation.

VEGETATION: RIPARIAN HABITAT AND WETLANDS (VRW)

Standard Operating Procedures

VRW-1: Utilize the techniques and methods for vegetation treatments identified in the Record of Decision for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2007).

VRW-2: Utilize the techniques and processes for protection of floodplains as identified in Executive Order 11988 – Floodplain Management.

VRW-3: Road crossings that will be used for longer than one year on perennial streams will be engineered and approved by the BLM Authorized Officer.

VRW-4: Do not locate roads or other facilities immediately parallel to streams. Where roads or facilities must cross streams, cross perpendicularly and immediately exit the buffer zone.

VRW-5: **(MLP)** Armor low water stream crossings, place properly sized culverts, or span streams as appropriate to protect the riparian zone.

VRW-6: Maintain a minimum of six inch stubble height at the end of October or winter grazing rotation on stream bank (lotic) riparian. If stability of riparian system is depend upon riparian grasses and forbs maintain adequate stubble height to dissipate energy from spring runoff.

VRW-7: Maintain a minimum of four inch stubble height at the end of October on wet meadows (lentic) systems.

VRW-8: Roads and trails (off-highway vehicle, horse, bicycle, hiking) will avoid wetlands and if avoidance is not possible will be designed and constructed in accordance with Technical Reference 2E22A68-NPS, Off-highway Vehicle Management.

Best Management Practices

VRW-9: Minimize crossing of streams (intermittent and perennial) and wetlands with vehicles, heavy machinery, and facilities (e.g. pipelines).

VRW-10: Locate residue piles (e.g., sawdust, field chipping residue, disposal ponds) away from drainages where runoff may wash residue into water bodies or wetlands.

VRW-11: Maintain appropriate vegetative/riparian buffers from ground disturbing or heavy use activities of at least 200 meters around riparian and wetland areas to protect and enhance the health and function of these systems.

VRW-12: Manage vegetation in riparian areas to provide wildlife habitat, adequate shade, sediment control, bank stability, and recruitment of wood into stream channels.

VRW-13: Locate project staging areas for refueling, maintenance equipment, materials, operating supplies, and boring in areas not designated as riparian and/or wetland areas.

VRW-14: Minimize surface disturbance within riparian areas and in wetlands.

VRW-15: Avoid late summer or early fall grazing in areas with declining willow populations. If grazing during these time periods must occur allow for at least one full year of rest between grazing rotations.

VRW-16: Utilize riparian pastures as appropriate to manage grazing activities in riparian areas. Vary the timing, duration, and frequency of grazing in riparian pastures.

VRW-17: Create off stream watering facilities when possible (e.g. stock tanks, stock ponds, nose pumps, etc.). Place grazing stock tanks and other watering facilities at least 550 meters from riparian zones.

VRW-18: Actively move cattle to and from riparian pastures or pastures containing riparian habitat. Do not allow for cattle to drift between pastures (BLM TR-1737-14 p. 33-34).

VRW-19: Low stress stockmanship methods should be used to encourage cattle grazing away from riparian areas. Cattle should be turned out away from riparian areas when enter new pastures or allotments. Cattle should also be guided to appropriate bedding areas.

VRW-20: Cull cattle from the herd that congregate or preferentially graze riparian areas for extended periods of time.

VRW-21: Place salt, hay, grain, molasses, and other supplements on uplands at least 550 meters away from riparian and wetland areas to encourage cattle to graze uplands and move out of riparian areas. Supplementation sites should be at least 1,100 meters (1,200 yards) apart.

VRW-22: Phase the size and timing of vegetation removal treatments within riparian areas. Phasing treatments sizes and timing to reduce soil and water temperatures, maintain bank and soil stability, and retain adequate wildlife habitat for cover and nesting.

VRW-23: Phase the size and timing of vegetation removal treatments on uplands immediately adjacent to riparian areas, and buffer treatment boundaries away from riparian areas to reduce sedimentation and erosion in riparian zones. Allow for at least one 1 year between vegetation removal treatments in uplands and in riparian or wetland areas.

VRW-24: Relocate existing roads away from riparian areas as feasible during requested permitting or authorization of these routes. Reclaim abandoned portions of relocated roads back to natural conditions. Recontour routes back to natural slopes as feasible, rip compacted soils (except for in close proximity to desirable trees), and seed disturbed areas.

VRW-25: Fences should not be placed immediately on the edge of riparian areas. Place fences away from riparian or wetland areas to decrease impacts from trailing along fences.

References

BLM (US Department of Interior, Bureau of Land Management). 2007. Final Vegetation Treatment Using Herbicides on Bureau of Land Management Lands in 17 Western States, Programmatic Environmental Impact Statement. BLM, Nevada State Office, Reno, NV. June 2007.

National Riparian Service Team. Riparian Area Management. Technical Reference 1737-20.Grazing Management Processes and Strategies for Riparian-Wetland Areas. 2006.

NOXIOUS AND INVASIVE WEED PREVENTION (WEED)

This list incorporates many suggested practices under various land uses, and is designed to allow managers to pick and choose those practices that are most applicable and feasible for each situation. Standard Operating Procedures (**SOP**s) as established by policy or law are identified as such.

Site-Disturbing Projects

Pre-project Planning

WEED-1: Environmental analyses for projects and maintenance programs should assess weed risks, analyze high-risk sites for potential weed establishment and spread, and identify prevention practices.

WEED-2: Determine site-specific restoration and monitoring needs and objectives at the onset of project planning.

WEED-3: Learn to recognize noxious and invasive weeds.

WEED-4: Inventory all proposed projects for weeds prior to ground-disturbing activities. If weeds are found, they should be treated (if the timing is appropriate) or removed (if seeds are present) to limit weed seed production and dispersal.

WEED-5: Be cognizant of moving equipment and machinery *from* weed-contaminated areas *to* non-contaminated areas.

WEED-6: Locate and use weed-free project staging areas. Avoid or minimize travel through weed infested areas, or restrict travel to periods when spread of disseminules is least likely.

WEED-7: Identify sites where equipment can be cleaned. Remove mud, dirt, and plant parts from project equipment before moving it into a project area. Seeds and plant parts should be collected and incinerated when possible.

WEED-8: If certified weed-free gravel pits become available in the county, the use of certified weed-free gravel will be required wherever gravel is applied to public lands (e.g., roads). **(SOP)**

WEED-9: Maintain stockpiled, non-infested material in a weed-free condition. Topsoil stockpiles should be promptly revegetated to maintain soil microbial health and reduce the potential for weeds.

WEED-10: Use competitive seed mixes when practical. A certified seed laboratory shall test each lot according to the Association of Official Seed

Analysts standards (which include an all-state noxious weed list) and provide documentation of the seed inspection test. The seed shall contain no noxious, prohibited, or restricted weed seeds and shall contain no more than 0.5 percent by weight of other weed seeds. Seed may contain up to 2.0 percent of "other crop" seed by weight, including the seed of other agronomic crops and native plants; however, a lower percentage of other crop seed is recommended. **(SOP)**

Project Implementation

WEED-11: Minimize soil disturbance. To the extent practicable, native vegetation should be retained in and around project activity areas, and soil disturbance kept to a minimum.

WEED-12: If a disturbed area must be left bare for a considerable length of time, cover the area with weed barrier until revegetation is possible.

Post-project

WEED-13: Clean all equipment before leaving the project site when operating in weed infested areas.

WEED-14: Inspect, remove, and properly dispose of weed seed and plant parts found on clothing and equipment. Proper disposal means bagging and incinerating seeds and plant parts or washing equipment in an approved containment area.

WEED-15: Revegetate disturbed soil where appropriate to optimize plant establishment for that specific site. Define revegetation objectives for each site. Revegetation may include topsoil replacement, planting, seeding, fertilization, and certified weed-free mulching as necessary. Use native material where appropriate and feasible.

WEED-16: Monitor sites where seed, hay, straw, or mulch has been applied. Eradicate weeds before they form seed. In contracted projects, contract specifications could require that the contractor control weeds for a specified length of time.

WEED-17: Inspect and document all ground-disturbing activities in noxious weed infested areas for at least three growing seasons following completion of the project. For ongoing projects, continue to monitor until reasonably certain that no weeds are present. Plan for follow-up treatments based on inspection results.

Roads and Utilities

Pre-project Planning

WEED-18: Communicate with contractors, local weed districts or weed management areas about projects and best management practices for prevention.

WEED-19: Remove mud, dirt, and plant parts from project equipment before moving it into a project area. Seeds and plant parts shall be collected and incinerated when practical, or washed off in an approved containment area. **(SOP)**

WEED-20: Avoid acquiring water for road dust abatement where access to water is through weed-infested sites.

WEED-21: Treat weeds on travel rights-of-ways before seed formation so construction equipment doesn't spread weed seed.

WEED-22: Schedule and coordinate blading or pulling of noxious weed-infested roadsides or ditches in consultation with the local weed specialist. When it is necessary to blade weed-infested roadsides or ditches, schedule the activity when disseminules are least likely to be viable.

Project Implementation

WEED-23: Retain shade to suppress weeds by minimizing the removal of trees and other roadside vegetation during construction, reconstruction, and maintenance; particularly on south aspects.

WEED-24: Do not blade or pull roadsides and ditches infested with noxious weeds unless doing so is required for public safety or protection of the roadway. If the ditch must be pulled, ensure weeds remain onsite. Blade from least infested to most infested areas.

Post-project

WEED-25: Clean all equipment (power or high-pressure cleaning) of all mud, dirt, and plant parts before leaving the project site if operating in areas infested with weeds. Seeds and plant parts shall be collected and incinerated when possible.

WEED-26: When seeding has been specified for construction and maintenance activities, seed all disturbed soil (except travel route) soon after work is completed.

WEED-27: Use a certified weed-free seed mix suitable for local environmental conditions that includes fast, early growing (preferably native) species to provide quick revegetation. Consider applying weed-free mulch with seeding. **(SOP)**

WEED-28: Periodically inspect roads and rights-of-way for noxious weeds. Train staff to recognize weeds and report locations to the local weed specialist. Follow-up with treatment when needed.

WEED-29: When reclaiming roads, treat weeds before roads are made impassable. Inspect and follow up based on initial inspection and documentation.

WEED-30: To avoid weed infestations, create and maintain healthy plant communities whenever possible, including utility rights-of-ways, roadsides, scenic overlooks, trailheads, and campgrounds.

Recreation Activities

WEED-31: Inspect and clean mechanized trail vehicles of weeds and weed seeds.

WEED-32: Wash boots and socks before hiking into a new area. Inspect and clean packs, equipment, and bike tires.

WEED-33: Avoid hiking through weed infestations whenever possible.

WEED-34: Keep dogs and other pets free of weed seeds.

WEED-35: Avoid picking unidentified "wildflowers" and discarding them along trails or roadways.

WEED-36: Maintain trailheads, campgrounds, visitor centers, boat launches, picnic areas, roads leading to trailheads, and other areas of concentrated public use in a weed-free condition. Consider high-use recreation areas as high priority sites for weed eradication.

WEED-37: Sign trailheads and access points to educate visitors on noxious and invasive weeds and the consequences of their activities.

WEED-38: In areas susceptible to weed invasion, limit vehicles to designated, maintained travel routes. Inspect and document travel corridors for weeds and treat as necessary.

WEED-39: Encourage use of pelletized feed for backcountry horsemen and hunters. Pelletized feed is unlikely to contain weed seed.

Watershed Management

WEED-40: Frequently and systematically inspect and document riparian areas and wetlands for noxious weed establishment and spread. Eradicate new infestations immediately since effective tools for riparian-area weed management are limited.

WEED-41: Promote dense growth of desirable vegetation in riparian areas (where appropriate) to minimize the availability of germination sites for weed seeds or propagules transported from upstream or upslope areas.

WEED-42: Address the risk of invasion by noxious weeds and other invasive species in watershed restoration projects and water quality management plans.

Grazing Management

WEED-43: Consider prevention practices and cooperative management of weeds in grazing allotments. Prevention practices may include:

a) Altering season of use

b) Minimizing ground disturbance

c) Exclusion

d) Preventing weed seed transportation

e) Maintaining healthy vegetation

f) Revegetation

g) Inspection

h) Education

i) Reporting

WEED-44: Provide certified weed-free supplemental feed in a designated area so new weed infestations can be detected and treated immediately. Pelletized feed is unlikely to contain viable weed seed.

WEED-45: If livestock may contribute to seed spread in a weed-infested area, schedule livestock use prior to seed-set or after seed has fallen.

WEED-46: If livestock were transported from a weed-infested area, annually inspect and treat entry units for new weed infestations.

WEED-47: Consider closing infested pastures to livestock grazing when grazing will either continue to exacerbate the condition or contribute to weed seed spread. Designate those pastures as unsuitable range until weed infestations are controlled.

WEED-48: Manage the timing, intensity (utilization), duration, and frequency of livestock activities to maintain the competitive ability of desirable plants and retain litter cover. The objective is to prevent grazers from selectively removing desirable plant species and leaving undesirable species.

WEED-49: Exclude livestock grazing on newly seeded areas with fencing to ensure that desired vegetation is well established, usually after 2-3 growing seasons. **(SOP)**

WEED-50: Reduce ground disturbance, including damage to biological soil crusts. Consider changes in the timing, intensity, duration, or frequency of livestock use; location and changes in salt grounds; restoration or protection of watering sites; and restoration of yarding/loafing areas, corrals, and other areas of concentrated livestock use.

WEED-51: Inspect areas of concentrated livestock use for weed invasion, especially watering locations and other sensitive areas that may be particularly susceptible to invasion. Inventory and manage new infestations.

WEED-52: Defer livestock grazing in burned areas until vegetation is successfully established, usually after 2-3 growing seasons. **(SOP)**

Outfitting / Recreation Pack and Saddle Stock Use

WEED-53: Allow only certified weed-free hay/feed on BLM lands. **(SOP)**

WEED-54: Inspect, brush, and clean animals (especially hooves and legs) before entering public land. Inspect and clean tack and equipment.

WEED-55: Regularly inspect trailheads and other staging areas for backcountry travel. Bedding in trailers and hay fed to pack and saddle animals may contain weed seed or propagules.

WEED-56: Tie or contain stock in ways that minimize soil disturbance and prevent loss of desirable native species.

WEED-57: Authorized trail sites for tying pack animals should be monitored several times per growing season to quickly identify and eradicate new weeds. Trampling and permanent damage to desired plants are likely. Tie-ups shall be located away from water and in shaded areas where the low light helps suppress weed growth.

WEED-58: Educate outfitters to look for and report new weed infestations.

Wildlife

WEED-59: Periodically inspect and document areas where wildlife concentrate in the winter and spring and cause excess soil disturbance.

WEED-60: Use weed-free materials for all wildlife management activities.

WEED-61: Incorporate weed prevention into all wildlife habitat improvement project designs.

Fire

Fire Management Plans

WEED-62: Prescribed fire plans should include pre-burn invasive weed inventory and risk assessment components as well as post-burn mitigation components.

WEED-63: Integrate prescribed fire and other weed management techniques to achieve best results. This may involve post-burn herbicide treatment or other practices that require careful timing.

WEED-64: Include weed prevention and follow-up monitoring in all prescribed fire activities. Include in burn plans the possibility for post-burn weed treatment.

Incident Planning

WEED-65: Increase weed awareness and weed prevention by providing training to new and/or seasonal fire staff on invasive weed identification and prevention.

WEED-66: For prescribed burns, inventory the project area and evaluate potential weed spread with regard to the fire prescription. Areas with moderate to high weed cover should be managed for at least 2 years prior to the prescribed burn to reduce the number of weed seeds in the soil. Continue weed management after the burn.

WEED-67: Ensure that a weed specialist is included on a Fire Incident Management Team when wildfire or prescribed operations occur in or near a weed-infested area. Include a discussion of weed prevention operational practices in all fire briefings.

WEED-68: Use operational practices to reduce weed spread (e.g., avoid weed infestations when locating fire lines).

WEED-69: Identify and periodically inspect potential helispots, staging areas, incident command posts, and base camps and maintain a weed-free condition. Encourage network airports and helibases to do the same.

WEED-70: Develop a burned-area integrated weed management plan, including a monitoring component to detect and eradicate new weeds early.

Fire-fighting

WEED-71: Ensure that all equipment (including borrowed or rental equipment) is free of weed seed and propagules before entering incident location.

WEED-72: When possible, use fire suppression tactics that reduce disturbances to soil and vegetation, especially when creating fire lines.

WEED-73: Use wet or scratch-lines where possible instead of fire breaks made with heavy equipment.

WEED-74: Given the choice of strategies, avoid ignition and burning in areas at high risk for weed establishment or spread.

WEED-75: Hose off vehicles on site if they have traveled through infested areas.

WEED-76: Inspect clothing for weed seeds if foot travel occurred in infested areas.

WEED-77: When possible, establish incident bases, fire operations staging areas, and aircraft landing zones in areas that have been inspected and are verified to be free of invasive weeds.

WEED-78: Cover weed infested cargo areas and net-loading areas with tarps if weeds exist and can't be removed or avoided.

WEED-79: Flag off high-risk weed infestations in areas of concentrated activity and show weeds on facility maps.

WEED-80: If fire operations involve travel or work in weed infested areas, a power wash station should be staged at or near the incident base and helibase. Wash all vehicles and equipment upon arrival from and departure to each incident. This includes fuel trucks and aircraft service vehicles.

WEED-81: Identify the need for possible fire rehab to prevent or mitigate weed invasion during fire incident and apply for funding during the incident.

Post-fire Rehabilitation

WEED-82: Have a weed specialist review burned area rehabilitation reports to ensure proper and effective weed prevention and management is addressed.

WEED-83: Thoroughly clean the undercarriage and tires of vehicles and heavy equipment before entering a burned area.

WEED-84: Treat weeds in burned areas. Weeds can recover as quickly as 2 weeks following a fire.

WEED-85: Schedule inventories 1 month and 1 year post-fire to identify and treat infestations. Eradicate or contain newly emerging infestations.

WEED-86: Restrict travel to established roads to avoid compacting soil that could hinder the recovery of desired plants.

WEED-87: Determine soon after a fire whether revegetation is necessary to speed recovery of a native plant community, or whether desirable plants in the

burned area will recover naturally. Consider the severity of the burn and the proportion of weeds to desirable plants on the land before it burned. In general, more severe burns and higher pre-burn weed populations increase the necessity of revegetation. Use a certified weed-free seed mix. **(SOP)**

WEED-88: Inspect and document weed infestations on fire access roads, equipment cleaning sites, and staging areas. Control infestations to prevent spread within burned areas.

WEED-89: Seed and straw mulch to be used for burn rehabilitation (e.g., for wattles, straw bales, dams) shall be certified weed-free. **(SOP)**

WEED-90: Replace soil and vegetation right side up when rehabbing fire line.

FISH AND WILDLIFE MANAGEMENT AND SPECIAL STATUS SPECIES (FWS)

Standard Operating Procedures

FWS-1: To minimize the spread of aquatic nuisance species including but not limited to zebra mussels, New Zealand mud snails, quagga mussels, rusty crayfish, and whirling disease vectors, personnel working in water will do the following:

a) Before leaving a particular water, inspect and clean gear used in the water, including watercraft (boats, canoes, kayaks, rafts, etc.), trailers, oars, nets, waders, wading boots, sandals, and life jackets. Remove vegetation, mud, grit, algae, etc. and drain water from boats and other gear.

b) Prior to entering another water body, clean your gear by spraying with 409 or a similar soap or bleach solution and let equipment dry in the hot sun for several hours, or use hot tap water that drains onto the ground, not down a drain or into another water course.

FWS-2: Fences constructed will comply with applicable wildlife fence standards, such as those described in BLM Handbook H-1741-1, Fencing (BLM 1989). Current standards for fencing cattle out in deer and elk range is a four strand fence, 40 inches high with a spacing of wires from ground to top of 60"(smooth bottom wire), 6" (second wire barbed), 6" (third wire barbed), 12" (top wire preferably smooth but may need to be barbed in areas of intense cattle use).

FWS-3: The GJFO will consult agency species management plans and other conservation plans as appropriate to guide management and devise mitigation measures when needed. Examples of these plans include but are not limited to the Colorado Wildlife Action Plan, Colorado Sagebrush: A Conservation Assessment and Strategy, National, Rangewide, statewide and local working group conservation plans for Gunnison and greater sage grouse, Sharing the land with pinyon-juniper birds, Birds in a sagebrush sea: managing sagebrush habitats

for bird communities, North American Landbird Conservation Plan, North American Waterbird conservation Plan, National and Colorado Partners in flight Bird Conservation Plans, Colorado Gunnison's and White-tailed Prairie Dog Conservation Strategy and Recovery plans for federally listed species.

FWS-4: Lessees will be notified that a lease parcel contains potential habitat for threatened (T), endangered (E), proposed (P), candidate (C) and BLM sensitive (S) plants, fish and wildlife.

FWS-5: Existing plant location records will be consulted and site inventories will be conducted to identify suitable habitat[1] for these plants. Surveys for occupied suitable habitat will be performed prior to any ground disturbance. Surveys will take place when the plants can be positively identified, during the appropriate flowering periods. Surveys will be performed by qualified field botanists/biologists who will provide documentation of their qualifications, experience and knowledge of the species prior to starting work.

FWS-6: In complex linear or split-estate actions early coordination with private landowners will facilitate the process the BLM must complete prior to authorizing the action. To comply with the Endangered Species Act, the BLM must consider the effects to listed species on private land that result from a Federal action, such as linear rights-of-way or constructing a well pad on private land to drill to federal lease. Before an applicant can contract a biological survey, the private surface owner must allow the biological consultant access. Projects can be authorized without completing biological surveys on private lands but this may lead to lengthy delays while the BLM completes consultation.

FWS-7: For Colorado hookless cactus and other T, E, P, and C species surface-disturbing activities will be avoided within 200 meters of occupied plant habitat[1] wherever possible and where geography and other resource concerns allow[2]. Fragmentation of existing populations and identified areas of suitable habitat will be avoided wherever possible.

FWS-8: For BLM sensitive species surface-disturbing activities will be avoided within 100 meters of occupied plant habitat[1] wherever possible and where geography and other resource concerns allow[2]. Fragmentation of existing populations and identified areas of suitable habitat will be avoided wherever possible.

[1] Occupied habitat includes areas historically or currently supporting plants and/or soils containing a viable seed bank. Suitable habitat is defined as an area that contains or exhibits the specific components or constituents necessary for plant persistence, as determined by existing maps plus field inspection and/or surveys. It may or may not be occupied by plants or a seed bank. Potential habitat is defined as an area that satisfies the broad criteria of the species' habitat description. It is usually determined by preliminary in-house assessment.

[2] An avoidance buffer helps to minimize dust transport, weed invasion, unauthorized vehicular activities, chemical and produced-water spills; and helps to protect pollinator habitat.

FWS-9: Where development is allowed within 100 meters of occupied habitat for T, E, P and C species or BLM sensitive species, unauthorized disturbance of plant habitat will be avoided by on-site guidance from a biologist, and by fencing the perimeter of the disturbed area, or such other method as agreed to by the Fish and Wildlife Service. In such instances, a monitoring plan approved by the Service will be implemented for the duration of the project to assess impacts to the plant population or seed bank. If detrimental effects are detected through monitoring, corrective action will be taken through adaptive management.

FWS-10: Surface disturbance closer than 20 meters to a listed plant will be considered an adverse effect. Mitigating measures within this narrow buffer are very important and helpful to individual plants, but we do not expect that all adverse effects can be fully mitigated within this distance. Some adverse effects due to dust, dust suppression, loss of pollinator habitat, and toxic spills will likely remain. There are two possible exceptions to this rule of thumb: 1) The new disturbance is no closer to a listed plant than preexisting disturbance and no new or increased impacts to the listed plant are expected; or 2) the listed plant is screened from the proposed disturbance (e.g., tall, thick vegetation or a berm acts as a screen or effective barrier to fugitive dust and other potential impacts).

FWS-11: Transplantation of potentially affected plants will not be used as a rationale to defend a "not likely to adversely affect" or a "no effect" determination for listed plant species.

FWS-12: For drilling pads and other installations, surveys will extend beyond the edge of disturbance by at least 200 meters for T, E, P and C species. For linear features such as roads and pipelines, surveys will extend at least 100 meters beyond the edge of the proposed ground disturbance along each side of the right of way. If special status plants are found within the survey area, the contractor will endeavor to determine the complete areal extent of the occurrence and the approximate number of individuals within the occurrence.

FWS-13: Documentation will include individual plant locations and suitable habitat distributions. Prior to conducting plant surveys, the operator will provide maps (as hard-copy and Geographic Information System files) of all proposed areas of disturbance to BLM. Maps will include existing and proposed roads, pipelines, well pads, pits, parking lots, and all other work areas. Post-construction or as-built maps will also be submitted to account for any deviations from pre-project maps. Specific polygons where rare plant surveys have been conducted will be included, along with the results of those surveys (positive or negative). The locations of any monitoring plots established to measure the status of rare plants and habitat in the vicinity of project activities will also be displayed.

FWS-14: Protect pollinator species for endangered or threatened species by incorporating the standard operating procedures found in the Final

Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2007).

FWS-15: Conduct development on existing or previously disturbed surface locations to reduce impacts on undisturbed areas and minimize impact on wildlife habitat.

FWS-16: To protect nesting raptors, raptor surveys shall be conducted prior to activities that could impact nesting activities. Based on the survey results the following mitigation measures may be applied:

- **a)** Protect nest sites from human disturbances by implementing CPW and USFWS recommended buffers around known nest sites.
- **b)** Provide perching and nesting structures as mitigation where disturbances are impacting raptors.
- **c)** Apply guidance from *Suggested Practices for Raptor Protection on Power Lines: the State of the Art in 2006* (Avian Power Line Interaction Committee 2006) and *Avian Protection Plan (APP) Guidelines* (Avian Power Line Interaction Committee and US Fish and Wildlife Service 2005) or most current guidance for new power line construction (including upgrades and reconstruction) to prevent electrocution of raptors.

FWS-17: **(MLP)** Implement drilling technology improvements, such as horizontal drilling, to maximize resource recovery and minimize environmental impacts.

FWS-18: **(MLP)** Install pipelines adjacent to roads wherever possible.

FWS-19: **(MLP)** Strategically apply fugitive dust control measures to reduce coating of vegetation and deposition in water sources, including enforcing established speed limits on BLM and private roads.

FWS-20: Ensure that ponds containing mining or other wastes that are potentially hazardous to fish and wildlife are enclosed to exclude birds, bats, and other wildlife attracted to the water.

FWS-21: When placing culverts on streams containing fish or amphibians, design culverts to maintain or improve aquatic organism passage.

FWS-22: In wildland fire situations work with Fire Resource Advisors during suppression efforts in the GJFO when considering dipping water from ponds, reservoirs, and lakes throughout the Grand Valley. Select reservoirs, ponds, and lakes harbor native and/or endangered fishes and should be avoided if at all possible. If these waters must be used, screen water intakes with ¼ inch mesh to avoid entrainment of fish.

FWS-23: When obtaining water from any live stream or river the following actions should be taken:

a) The best method to avoid entrainment of fish is to pump from off-channel locations (e.g., ponds, lakes, and diversion ditches), not directly connected to the mainstem rivers even during high spring flows;

b) If the pump head must be located in the river channel where larval fish are known to occur, the following measures apply:

1. Do not situate the pump in a low-flow or no-flow area as these habitats tend to concentrate larval or young-of-year fishes. Instead place the pump into fast moving/riffle habitat;
2. limit the amount of pumping, to the greatest extent possible, during that period of the year when larval fish may be present (June 1 to August 15); and
3. avoid pumping, to the greatest extent possible, during the pre-dawn hours (two hours prior to sunrise) as larval fish drift studies indicate that this is a period of greatest daily activity.

c) Screen all pump intakes with ¼-inch or finer mesh material.

d) Report any fish impinged on any intake screens to the Fish and Wildlife Service (970.243.2778) or the Colorado Division of Wildlife:

Northwest Region
711 Independent Ave., Grand Junction, CO 81505
Phone: (970) 255-6100

Southwest Region
415 Turner Dr., Durango, CO 81303
Phone: (970) 375-6700

Best Management Practices

FWS-24: Design lighting required for recreation, oil and gas, and other programs to be directing downward, using shielded lights, and only the minimum illumination required, utilize green lights in areas that require illumination at night and prevent skyward projection of lighting that may disorient night migrating birds. Sodium vapor lights, widely used for streetlights and security lighting, should not be used because they have been shown to attract night-flying birds.

FWS-25: Limit flaring operations when well pads are within 100 m of occupied T, E, C, P and sensitive species habitat.

FWS-26: Control noxious weeds using integrated techniques. Limit chemical control in areas with rare plant species to avoid damage to non-target species. Mechanical or chemical control in and near rare plant habitat shall only be implemented by personnel familiar with the rare plants.

FWS-27: Prohibit collection of rare plants or plant parts, except as permitted by the BLM Authorized Officer for scientific research.

FWS-28: The use of deicers and dust suppressants within 100 meters (328 feet) of road-side occurrences of special status plant species will require prior approval from the BLM.

FWS-29: Herbicide application shall be kept at least 200 meters from known plant populations, except in instances where weed populations threaten habitat integrity or plant populations. Great care shall be used to avoid pesticide drift in those cases.

FWS-30: Use temporary water delivery lines laid on the surface of the ground to reduce truck traffic.

FWS-31: Retain existing snags for wildlife use in places where they will not create a human hazard.

FWS-32: Where linear disturbance is proposed edges of vegetation shall be feathered to avoid long linear edges of habitat and allow for greater habitat complexity for wildlife.

FWS-33: Protect existing temporary pools to providing breeding and hibernating habitat for amphibians.

FWS-34: Avoid fragmentation of wildlife habitat especially in wildlife migration and movement corridors.

FWS-35: **(MLP)** Encourage the use of a variety of BMPs, as defined by the most recent version of "Best Management Practices for Oil and Gas Development on Public Lands," http://www.blm.gov/bmp/.

FWS-36: Identify in-channel features (e.g., culverts, water diversion structures) that block aquatic organism movement and/or impair stream connectivity and replace, modify, or remove these impediments as they are identified and as opportunities allow. Consider and address aquatic organism passage and appropriate life-stage requirements when designing new or modifying existing stream crossings.

FWS-37: Where construction of in-channel barriers will benefit aquatic species by limiting access from competitive species and/or disease vectors, consider barriers as a management tool on a site-specific basis.

FWS-38: In critical and sever winter range for deer and elk avoid recurring transportation activity within two hours before and after sunrise and sunset to avoid disturbing wintering wildlife between Dec1 and May1 (excluding emergencies).

FWS-39: For intensive activities within winter range for wildlife use carpooling for activities like crew rotations and shift changes.

FWS-40: For intensive activities within winter range for wildlife monitor and enforce speed limits

FWS-41: For intensive activities within winter range for wildlife prohibit pets and possession of fire arms on the site by employees or contractors.

FWS-42: Implement closed-loop drilling systems on all active rigs, using only a small cuttings mixing area on each location.

FWS-43: Optimize completion operations to minimize impact. Techniques include:

- **a)** Simultaneous drilling and completion operations minimize the operating time on the well pad, where space and safety restrictions permit the use of this technique.
- **b)** Remote completion operations using nearby existing well pads minimize overall surface disturbance.

FWS-44: Reuse water whenever possible for drilling and completion activities. Recycle all water used in completion activities to meet water needs for completion of subsequent wells on location; this will reduce fresh water consumption and reduce truck traffic.

FWS-45: Expand the water distribution system to efficiently move water in pipelines, reducing truck traffic for drilling and completion activities.

FWS-46: Reduce visits to well sites through remote monitoring (i.e. SCADA) and the use of multi-function contractors.

FWS-47: **(MLP)** Use solar panels as an alternative energy source for on location production equipment, to limit trips to the location for production maintenance.

FWS-48: Use dual-fuel natural gas/diesel systems, reducing diesel delivery to the well site by as much as 70 percent.

FWS-49: **(MLP)** Use existing roads instead of new construction segments wherever feasible.

FWS-50: **(MLP)** Seed all access roads and facilities other than well pads in a timely manner after construction has been completed. Seed all topsoil from pad construction.

FWS-51: Noise reduction techniques and designs will be used to reduce noise from compressors or other motorized equipment.

FWS-52: Where new roads are constructed seasonal restrictions on public vehicular access will be evaluated where there are wildlife conflict or road damage/maintenance issues.

FWS-53: Install multiple pipelines in a single trench, to minimize disturbance.

FWS-54: Install trench plugs (sloped to allow wildlife or livestock to exit the trench should they enter) at known wildlife or livestock trails to allow safe crossing on long spans of open trench.

FWS-55: Coordinate with the Colorado Parks and Wildlife (CPW) on BLM projects and BLM-authorized projects that are proposed within 0.5-mile of a small capacity water development and 2.0-mile of a large capacity wildlife water development. Projects determined to have a detrimental effect on wildlife using wildlife water developments will be avoided or rerouted if possible.

FWS-56: Coordinate with CPW on migratory bird inventories when migratory bird inventories are proposed by BLM or required of third parties.

References

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Elliott, B.A., S. Spackman Panjabi, B. Kurzel, B. Neely, R. Rondeau, and M. Ewing. 2009. Recommended Best Management Practices for Plants of Concern. Practices developed to reduce the impacts of oil and gas development activities to plants of concern. Unpublished report prepared by the Rare Plant Conservation Initiative for the National Fish and Wildlife Foundation.

WILDLIFE DAMAGE MANAGEMENT (WDM)

Standard Operating Procedures

WDM-1: Control activities conducted by the US Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services will be coordinated with the GJFO on an annual basis, including review of authorized control areas and annual submittal of control activities on GJFO lands.

WDM-2: US Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services will notify the GJFO before any damage control activity is implemented within the restricted area(s), and exceptions will be approved on a case-by-case basis.

WDM-3: All US Environmental Protection Agency use restrictions and requirements for toxicants are to be followed where control devices are employed on public lands. The GJFO must be notified before any toxicants are deployed and a map of the treatment area must be provided. Adequate signage must be provided and maintained.

WDM-4: All aerial control activities in the wild horse area must be conducted in compliance with all applicable Colorado State Statutes, the provisions of the 1971 Wild and Free-Roaming Horses and Burros Act, as amended, and its associated regulations (43 Code of Federal Regulations 4700). No harassment of wild horses and burros is permitted under these provisions; maliciously or negligently causing the injury of a wild horse or burro is also expressly prohibited.

WDM-5: Any aerial control activities in the wild horse area will require notification of and prior approval from the GJFO.

WDM-6: During the foaling season (March 1-June 30), a flyover survey to determine whether wild horses are present will be conducted prior to commencing any wildlife damage management activities. This survey will be conducted at a minimum of 500 feet above ground level. If wild horses are determined to be present, flyover surveys will be adjusted as needed to prevent any disturbance or harassment of the animals present, and wildlife damage

activities that would result in disturbance or harassment of these animals will not take place.

WDM-7: All persons involved with wildlife damage management activities shall be briefed on the regulations and penalties relating to harassment of wild horses prior to commencing animal control operations.

WDM-8: The GJFO will identify through the US Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services annual work plan process areas of public lands considered special resource use areas on which control activities be avoided except as requested by CPW, or other protective restrictions may apply. Examples may include special status species habitats (e.g., sage-grouse leks and nesting areas, and bald eagle nests).

WDM-9: Interim Management Policies must be adhered to at all times in Wilderness Study Areas and the GJFO must be notified before any wildlife damage management activity is implemented. Wildlife damage management activities in Wilderness Study Areas must be directed at the offending animal. Aerial hunting may be allowed in Wilderness Study Areas as long as those actions do not impair wilderness characteristics.

WILD HORSES (WH)

Standard Operating Procedures

WH-1: Wild Horse and/or Burro Gathers Standard Operating Procedures.

WH-2: Wild Horse Fertility Control Treatment Standard Operating Procedures.

WH-3: All new or reconstructed exclosures within herd management areas will follow the horse fencing standards.

WH-4: Any new facilities shall be a minimum of 0.25-mile from water sources to avoid hindrance of use by wild horses.

WH-5: Any new facilities shall be designed to avoid injury to horses or fenced to prevent wild horse access.

WH-6: Require rebar to be welded between the rails of cattle guards if the cattle guard or similar device is to be installed in or near herd management areas to decrease the risk of wild horse and/or burro entrapment.

WH-7: All new or reconstructed fences on the perimeter of the wild horse range will be comprised of materials that would reduce injury to wild horses. (e.g., wooden poles, smooth wire)

WH-8: Seed mixes for projects within the wild horse range shall benefit wild horses (emphasis on palatable grasses) while meeting land health standards.

WH-9: If a project involves heavy or sustained traffic; require road signs for safety and protection of wild horses.

WH-10: Above ground facilities requiring painting will be designed to blend in with local environment.

WH-11: Disturbed areas will be contoured to blend with the natural topography. Blending is defined as reducing form, line, and color contrast associated with the surface disturbance.

WH-12: Still or motion picture photography for personal use is permitted; however, photography for commercial purposes may require a permit. Contact the local BLM office.

WH-13: Feed weed-free certified hay or pellet feed (refer to www.weedfreefeed.com for more information).

WH-14: For guide/outfitters and recreationists: The permittee shall inform all staff and clients that wild horses protected by federal law and will prevent harassment of wild horses from permitted activities. Prohibited acts include but are not limited to: maliciously injuring or harassing a wild horse; chasing wild horses, removing or attempting to remove a wild horse from public lands; destroying a wild horse; selling or attempting to sell a wild horse; and, commercially exploiting a wild horse. Crimes are punishable by fine and/or imprisonment. Examples of violations might include harassment by all-terrain vehicle, injury or death by a bullet or arrow, and illegal capture.

Best Management Practices

WH-15: Adequate water for livestock and dogs may not be available along your route. Springs and other water sources identified on maps may be dry at any time.

WH-16: Bring a sufficient quantity of drinking water for your riding stock (15 gallons or more per day, per animal)

WH-17: Secure your riding stock adequately (use portable panels or corrals).

WH-18: Be sure your domestic riding stocks are current with annual vaccinations.

WH-19: Do not bring sick or diseased riding animals into herd management areas. Wild horses on the range are not vaccinated against any diseases.

WH-20: Do not drive across, camp on, or stake riding stock out to graze on riparian areas.

WH-21: Water riding stock only at springs or streams with stable banks and dry soils.

WH-22: Keep riding stock secured away from dispersed camp sites and spread manure before leaving.

WH-23: Explore the area prior to hauling in a trailer to assess access. Pulling horse or other trailers off of State or County designated roads shall only be done with prior operator knowledge of the road. Many roads are narrow, rough, steep, or impassable. Turning around may be difficult or impossible, especially with a trailer**.**

WH-24: In the event that a foaling mare or newborn foal is encountered, every effort shall be made to stay away from that location. Do not attempt to help the mare or foal.

WH-25: Stay at least 100 feet away from wild horses.

WH-26: Try not to place yourself between members of a band or between adjoining bands.

WH-27: Observe wild horses quietly so wild behavior is not disrupted.

WH-28: If you are approached by wild horses while riding horseback, stay calm, maintain control of your animal, and leave the area as soon as you can. Ride with others whenever possible.

WH-29: Mares, especially if in season, may attract wild stud horses to you or your camp. Keep domestic horses secure at all times. Ride with others who are experienced and skilled at resolving unwanted wild horse or burro interactions.

WH-30: Do not feed or try to attract animals towards you.

WH-31: Keep dogs under control so they do not disturb or chase wild horses.

WH-32: Report sick or injured animals, or violations, to the BLM.

WH-33: Please do not attempt to assist or handle sick or injured animals**.**

CULTURAL RESOURCES (CR)

Standard Operating Procedures

CR-1: Evaluation of all BLM activities and BLM authorized activities shall be made in compliance with BLM Manual 8100, The Foundations for Managing Cultural Resources (BLM 2004a), and subsequent 8100 series (BLM 2004b, 2004c, 2004d, 2004e, 2004f, 2004g, and 2004h); Handbook of Guidelines and Procedures for Inventory, Evaluation, and Mitigation of Cultural Resources (BLM

1998, rev. 2007); and the current State Protocol Agreement between the Colorado BLM and the Colorado State Historic Preservation Office.

CR-2: In complex linear or split-estate actions early coordination with private landowners will facilitate the process the BLM must complete prior to authorizing the action. To comply with the National Historic Preservation Act, the BLM must consider the effects to cultural resources on private land that result from a Federal action, such as linear rights-of-way or constructing a well pad on private land to drill to federal lease. Before an applicant can contract a cultural survey, the private surface owner must allow the cultural consultant access. Projects can be authorized without completing cultural surveys on private lands but this may lead to lengthy delays while the BLM completes consultation.

CR-3: The holder of a BLM authorization to carry out land use activities on Federal lands, including all leases and permits, must notify the BLM, by telephone and written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony (43 Code of Federal Regulations [CFR] 10.4(g)). Activities must stop in the immediate vicinity of the discovery. The discovery must be protected from the authorized activity for a period of 30 days or unless otherwise notified by the (43 CFR 10.4(c) and (d)).

CR-4: The National Historic Preservation Act, as amended, requires that if newly discovered historic or archaeological materials or other cultural resources are identified during project implementation, work in that area must stop and the BLM Authorized Officer must be notified immediately. Within five working days the BLM Authorized Officer will inform the proponent as to:

a) Whether the materials appear eligible for the National Register of Historic Places;

b) The mitigation measures the proponent will likely have to undertake before the site could be used (assuming in situ preservation is not practicable), (36 CFR 800.13); and

c) A timeframe for the BLM Authorized Officer to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Office, that the BLM Authorized Officer's findings were correct and mitigation was appropriate.

CR-5: A standard Education/Discovery stipulation for cultural resource protection shall be attached to the land use authorization. The operator or its contractor is responsible for informing all persons who are associated with the project operations that Federal laws protect cultural resources and they will be subject to prosecution for disturbing or destroying any historic or archaeological sites, or collecting any cultural objects, prehistoric or historic from federal lands.

CR-6: Strict adherence to the confidentiality of information concerning the nature and location of archeological resources will be required of any company issued a land use authorization and all of their subcontractors (Archaeological Resource Protection Act, 16 US Code 470hh).

CR-7: When a NEPA document specifically stipulates the need for an archaeological monitor during construction or a project is located in areas that require an archaeological monitor to be present (see conditions of approval polygons for Sunnyside, Grand Mesa Slopes, and Indian Creek) it is the applicant's responsibility to contract an archaeological consultant holding a current Colorado BLM permit and authorized to work in the GJFO. Fieldwork authorizations are required prior to any construction monitoring Cultural Resource monitoring where resources are present or reasonably expected is permitted only when the ground surface is free of snow, unfrozen, and dry.

CR-8: A cultural resource must be allocated to public use prior to:

- **a)** authorizing or implementing any Heritage Tourism project;
- **b)** when Special Recreation Permits are issued that will use a cultural resource; or
- **c)** a BLM recreation project is proposed that involves the use or interpretation of a cultural resource.

Best Management Practices

CR-9: BLM specialists shall complete a File Search Request form and submit to the Field Office Archaeologist as soon as there is proposed BLM activity or BLM authorized activity that will require preparation of a NEPA document. This will provide the specialist with immediate information as to the need for Class III inventory, whether that will be contracted or in-house, or the presence of Cultural Resources that may preclude or impede their project.

CR-10: Once it has been determined that a project will require contracted cultural inventory the BLM specialists shall complete a *Request for CR Compliance* form *(find at S:\blm share\CRM_for_FO\ CR Compliance)* and submit to the Field Office Archaeologist as soon as they have a final design for a BLM proposed project or activity.

CR-11: When possible, locate projects in areas that are previously disturbed. To comply with the National Historic Preservation Act the BLM must identify significant cultural resources. Under the current regulations and guidelines the BLM may decide that no inventory needs to be conducted because the proposed action is located in an environment where ground disturbance has modified the surface so extensively that the likelihood of finding intact cultural resources is negligible.

CR-12: Where proposed projects or development will adversely affect a cultural resource, testing, data recovery or full excavation to recover scientific information may be required as mitigation. The applicant or operator bears the full cost of mitigation and is encouraged to consider avoiding adverse effects through project relocation or redesign rather than mitigating adverse effects.

CR-13: **(MLP)** A *File Search Request* form must be submitted to the Field Office Archaeologist identifying the site and the proposed use so the allocation to public use can be confirmed.

References

BLM (United States Department of the Interior, Bureau of Land Management). 1998. Handbook of Guidelines and Procedures for Inventory, Evaluation, and Mitigation of Cultural Resources. Rev. 2007. BLM, Colorado State Office, Lakewood, CO.

_____. 2004a. Manual 8100: The Foundations for Managing Cultural Resources. Release 8-72. BLM, Washington, DC. December 3, 2004.

_____. 2004b. Manual 8110: Identifying and Evaluating Cultural Resources. 8-73. BLM, Washington, DC. December 3, 2004.

_____. 2004c. Manual 8120: Tribal Consultation Under Cultural Resources. 8-74. BLM, Washington, DC. December 3, 2004.

_____. 2004d. Manual 8120-1: General Procedural Guidance for Native American Consultation. 8-75. BLM, Washington, DC. December 3, 2004.

_____. 2004e. Manual 8130: Planning for Uses of Cultural Resources. 8-76. BLM, Washington, DC. December 3, 2004.

_____. 2004f. Manual 8140: Protecting Cultural Resources. 8-77. BLM, Washington, DC. December 3, 2004.

_____. 2004g. Manual 8150: Permitting Uses of Cultural Resources. 8-78. BLM, Washington, DC. December 3, 2004.

_____. 2004h. Manual 8170: Interpreting Cultural Resources for the Public. 8-79. BLM, Washington, DC. December 3, 2004.

TRIBAL CONSULTATION (TC)

Standard Operating Procedures

TC-1: The BLM has a responsibility to develop a government-to-government relationship with the tribes: the formal relationship that exists between the Federal Government and tribal governments under United State laws. Tribal

governments are considered dependent domestic sovereignties with primary and independent jurisdiction (in most cases) over tribal lands. Concerning proposed BLM plans and actions, at least the level of consideration and consistency review provided to State governments must be afforded to tribal governments.

TC-2: The BLM is responsible for consultation under General Authorities defined as "laws, executive orders, and regulations that are not considered "cultural resource authorities". The regulations implementing both Federal Land Policy and Management Act and NEPA require Native American consultation. The American Indian Religious Freedom Act and the Indian Sacred sites order (Executive Order 13007) pertain to the free exercise clause of the First Amendment (BLM Manual 8120-1 Guidelines for Conducting Tribal Consultation [BLM 2004], Federal Land Policy and Management Act Title II, NEPA Section 102, 40 CFR 1501.2 and 1501.7)

TC-3: Tribes must be consulted whenever other governmental entities or the public are formally involved in the BLM's environmental review process in any NEPA documentation that entails public involvement or initial discussions with local or state governments (BLM Handbook H-1790-1, National Environmental Policy Act [BLM 2008]).

TC-4: NHPA Section 106 consultations for cultural resources that are significant to Indian tribes. Consultation with an Indian tribe must recognize the government-to-government relationship between the Federal Government and Indian tribes. The agency official shall consult with representatives designated or identified by the tribal government. Consultation shall be conducted in a manner sensitive to the concerns and needs of the Indian tribe. (36 CFR 800.2(c)(2)(ii)(C).

Best Management Practices

TC-5: Notification is conducted by simple one-way written means. Consultation is generally construed to mean direct, two-way communication.

TC-6: When publishing notices or open letters to the public indicating that the BLM is contemplating an action and that comments are welcome, managers shall send individual letters, certified mail or delivery confirmed to tribes requesting their input on actions being considered. If this is an opening dialogue, prior to having developed a strong working relationship with the tribe, if a timely response is not received the manager shall follow up with personal telephone calls.

TC-7: For the benefit of both parties, managers are encouraged to strive for the most efficient and effective method of consultation. Whatever method is chosen, all consultation activities shall be carefully documented in the official record.

TC-8: Consultation roles can be facilitated but may not be transferred to others. Cultural resource consulting firms working for land use applicants cannot negotiate, make commitments, or otherwise give the appearance of exercising the BLM's authority in consultations.

TC-9: Owing to their status as self-governing entities, tribes shall be notified and invited to participate at least as soon as (if not earlier than) the Governor, state agencies, local governments, and other federal agencies.

TC-10: Tribal consultation means dialogue between a BLM manager and an American Indian Tribe. The BLM managers are encouraged to visit tribal councils and appropriate tribal leaders on a recurring basis. This face-to-face meeting helps to develop relationships that can reduce the time and effort spent in later consultation or individual projects. This government-to-government consultation shall be treated with appropriate respect and dignity of position.

References

BLM (United States Department of the Interior, Bureau of Land Management). 2004. Manual 8120: Tribal Consultation Under Cultural Resources. 8-74. BLM, Washington, DC. December 3, 2004.

_____. 2004. Manual 8120-1: General Procedural Guidance for Native American Consultation. 8-75. BLM, Washington, DC. December 3, 2004.

_____. 2008. Handbook H-1790-1: National Environmental Policy Act. Washington, DC. January 2008.

PALEONTOLOGY (P)

Standard Operating Procedures

P-1: Attach lease notices, stipulations, and other requirements to permitted activities to prevent damage to paleontological resources.

P-2: Prior to any surface disturbing activities, an inventory of paleontological resources (fossils) may be required. Mitigation may be required upon the discovery of any vertebrate fossil or other scientifically-important paleontological resource. Mitigation of scientifically important paleontological resources may include avoidance, monitoring, collection, excavation, or sampling. Mitigation of discovered scientifically important paleontological resources might require the relocation of the disturbance over 100 meters. This and any subsequent mitigation work shall be conducted by a BLM-permitted paleontologist.

P-3: The lessee/operator shall bear all costs for inventory and mitigation (WO IM-2009-011).

P-4: The lessee is prohibited from surface occupancy and surface-disturbing activities within 100 meters around all known scientifically important paleontological resources.

(Locality-specific name)

This stipulation is to protect scientific information that may be damaged from inadvertent or authorized uses.

Exception: The Authorizing Officer may: (1) allow for paleontological excavation and (2) change the protection boundary on a case-by-case basis, taking into account topographical barriers, the design of the proposed action, and the characteristics of the paleontological resource.

Modification: None

Waiver: Destruction of all the physical characteristics of a paleontological resource.

P-5: A standard Education/Discovery stipulation for paleontological resource protection shall be attached to the land use authorization. The operator or its contractor is responsible for informing all persons who are associated with the project operations that Federal laws protect paleontological resources and they will be subject to prosecution for disturbing or destroying any vertebrate fossils or paleontological sites, or collecting any fossilized bones, tracks or any other vertebrate trace fossils from federal lands.

P-6: The Paleontological Resources Preservation Act (PRPA) [16 U.S.C. 470aaa] requires the lessee/operator to immediately suspend activities in the vicinity of a vertebrate fossil discovery, protect the discovery from damage and notify the BLM Authorized Officer of any paleontological resources discovered as a result of operations under this authorization. The Authorized Officer will evaluate, or will have evaluated, such discoveries as soon as possible, but not later than 10 working days after being notified. Appropriate measures to mitigate adverse effects to significant paleontological resources will be determined by the Authorized Officer after consulting with the operator. Within 10 days, the operator will be allowed to continue construction through the site, or will be given the choice of either (1) following the Authorized Officer's instructions for stabilizing the fossil resource in place and avoiding further disturbance to the fossil resource, or (2) following the Authorized Officer's instructions for mitigating impacts to the fossil resource prior to continuing construction through the project area.

VISUAL RESOURCES (V)

Standard Operating Procedures

V-1: All new surface-disturbing projects or activities, regardless of size or potential impact, will incorporate visual design considerations during project design as a reasonable attempt to meet the Visual Resource Management (VRM)

class objectives for the area and minimize the visual impacts of the proposal. Visual design considerations will be incorporated by:

a) Using the VRM contrast rating process (required for proposed projects in highly sensitive areas, high impact projects, or for other projects where it appears to be the most effective design or assessment tool), or by

b) Providing a brief narrative visual assessment for all other projects that require an environmental assessment or environmental impact statement.

c) Measures to mitigate potential visual impacts could include the use of natural materials, screening, painting, project design, location, or restoration (See Appendix H; BLM Handbook H-8431-1, Visual Resource Contrast Rating; or online at http://www.blm.gov/nstc/VRM/8431.html, for information about the contrast rating process).

V-2: All new roads will be designed and constructed to a safe and appropriate standard, "no higher than necessary" to accommodate intended vehicular use. Roads will follow the contour of the land where practical. Existing oil and gas roads that are in eroded condition or contribute to other resource concerns will be brought to BLM standards within a reasonable period of time.

Best Management Practices

V-3: Impacts to dark night skies will be prevented or reduced through the application of specific mitigation measures identified in activity level planning and NEPA level review. These measures may include directing all light downward, using shielded lights, using only the minimum illumination necessary, using lamp types such as sodium lamps (less prone to atmospheric scattering), using circuit timers, and using motion sensors.

V-4: Any facilities authorized will use the best technology available to minimize light emissions

V-5: Any new permits/authorizations, including renewals, will be stipulated to use the best technology available to minimize light emissions as compatible with public health and safety.

V-6: Restrict visual intrusion in VRM Class I and II areas and within 0.25-mile of historic trails.

V-7: Screening facilities from view and avoiding placement of production facilities on steep slopes, hilltops, and ridgelines.

V-8: Paint all facilities a color that best allows the facility to blend with the background (Operator-committed BMP).

V-9: Gravel of road color shall be similar to adjacent dominant soil colors.

V-10: Reduce impacts on visual resource management class II and class III areas.

V-11: Bury distribution powerlines and flow lines in or adjacent to access roads.

V-12: Repeat form, line, color, and texture elements to blend facilities with the surrounding landscape

V-13: All aboveground facilities including power boxes, building doors, roofs, and any visible equipment will be painted a color selected from the latest national color charts that best allows the facility to blend into the background.

V-14: Perform final reclamation recontouring of all disturbed areas, including access roads, to the original contour or a contour that blends with the surrounding topography.

V-15: To the extent opportunities are practicable, extreme visual contrast created by past management practices or human activities will be minimized. Examples include right-of-way amendments, mineral material sites, abandoned mines, and areas impacted by unauthorized off-road driving.

V-16: Reclaim unused well pads within one year.

V-17: Final reclamation of all oil and gas disturbance will involve re-contouring of all disturbed areas, including access roads, to the original contour or a contour that blends with the surrounding topography and revegetating all disturbed areas

V-18: The use of submersible pumps will be strongly encouraged, especially in VRM Class I, II or III areas or any area visible by the visiting public.

V-19: The use of partial or completely below-grade wellheads will be strongly encouraged in high visibility areas as well as VRM Class I, II or III areas.

V-20: The placement of production facilities on hilltops and ridgelines will be prohibited where they are highly visible.

WILDLAND FIRE ECOLOGY AND MANAGEMENT (WFM)

Standard Operating Procedures

Fire Suppression

WFM-1: Resource Advisors and other applicable specialists shall be utilized to advise the Incident Commander and suppression resources on the natural resource values during the suppression effort.

WFM-2: Avoid applying fire retardant in or near drinking water sources.

WFM-3: Avoid the application of retardant or foam within 300 feet of a waterway or stream channel. Deviations from this procedure are acceptable if life or property is threatened.

WFM-4: Fire lines will not be constructed by heavy equipment within riparian stream zones. If construction is necessary due to threats to life or property, control lines shall terminate at the edge of the riparian zone at a location determined appropriate to meet fire suppression objectives based on fire behavior, vegetation/fuel types, and fire fighter safety.

WFM-5: For streams currently occupied by Cutthroat Trout or other aquatic special status species, extractions of water from ponds or pools shall not be allowed if stream inflow is minimal and extraction of water will lower the existing pond or pool level.

WFM-6: Lands will be temporarily closed to other uses in areas where fire suppression is being implemented.

WFM-7: Stream flow shall not be impounded or diverted by mechanical means in order to facilitate extraction of water from the stream for fire suppression efforts.

WFM-8: If it is determined that use of retardant or surfactant foam within 300 feet of a waterway or stream channel is appropriate due to threats to life or property; alternative line construction tactics are not feasible because of terrain constraints, congested areas, or lack of ground personnel; or potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator shall determine whether there have been any adverse effects to federally listed species. If the action agency determines that adverse effects were incurred by federally listed species or their habitats, then the action agency must consult with the Service, as required by 50 CFR 402.05, as soon as practicable.

WFM-9: Avoid whenever possible burning out unburned islands of native vegetation, specifically sagebrush communities.

WFM-10: Minimize/mitigate impacts to cultural resources and pristine vegetative communities.

WFM-11: Prior to use on BLM-administered lands, thoroughly rinse to remove mud and debris from all fire suppression equipment from off-district or out of state and used to extract water from lakes, ponds, streams, or spring sources. Examples of this equipment are helicopter buckets, draft hoses, and screens. After cleaning the equipment, disinfect it to prevent the spread of invasive aquatic species. Do not rinse equipment with disinfectant solutions within 100 feet of natural water sources. GJFO suppression equipment used to extract water from sources known to be contaminated with invasive aquatic species, as

identified by the US Fish and Wildlife Service and Colorado Parks and Wildlife, also shall be disinfected beforehand on lands administered by the GJFO.

WFM-12: Vehicle and equipment shall be washed before being assigned to fires to minimize the spread of noxious weeds. Larger fires with incident management teams assigned may need to have a weed wash station.

Emergency Stabilization and Rehabilitation

WFM-13: Stabilize areas that have low potential to naturally revegetate and that have high wind and soil erosion potential. Treatments include the following:

a) Installing water bars and other drainage diversions, culverts along fire roads, dozer lines, and other cleared areas;

b) Seeding and planting to provide vegetative cover;

c) Spreading mulch to protect bare soil and discourage runoff;

d) Repairing damaged roads and drainage facilities;

e) Clearing stream channels of structures or debris that is deposited by suppression activities;

f) Installation of erosion control structures;

g) Installation of channel stabilization structures;

h) Fence or restrict areas to livestock and wild horse and burro grazing to promote success of natural revegetation or establishment of seeded species;

i) Lands may be temporarily closed to other uses during emergency stabilization and rehabilitation practices if activities inhibit treatment;

j) Repair or replace range improvements and facilities; and

k) Monitor emergency stabilization and rehabilitation treatments.

Best Management Practices

Fuels Management

WFM-14: Construct fuel breaks or green strips to protect wildland-urban interface communities and provide for firefighter safety by using mechanical, chemical, biological, and prescribed fire treatment methods.

WFM-15: Construct fuel breaks and green strips in areas containing a good understory of native perennials in order to successfully compete with and deter the establishment and spread of annual species.

WFM-16: Seed fuels treatments in areas that do not have a good understory of desirable native perennials that can successfully compete with annual weed species.

WFM-17: Where practicable, use large-scale landscape planning to connect fuel treatments and avoid small piecemeal projects.

WFM-18: Plan for maintenance cycles and maintain fuel treatments to ensure effectiveness.

WFM-19: Prevent seeded species from being grazed during the first two growing seasons (>18 months) following seeding, or until site-specific analysis and/or monitoring data indicates that vegetation cover, species composition and litter accumulation are adequate to support and protect watershed values, meet vegetation objectives and sustain grazing use

WFM-20: Provide fire prevention and mitigation outreach information and education to communities within the GJFO.

WILDERNESS, WILDERNESS STUDY AREAS, AND LANDS WITH WILDERNESS CHARACTERISTICS (WSA)

Standard Operating Procedure

WSA-1: All Wilderness Study Areas will be managed in accordance with BLM Handbook H-8550-1, Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM 1995).

References

BLM (United States Department of the Interior, Bureau of Land Management). 1995. Handbook H-8550-1. Interim Management Policy and Guidelines for Lands Under Wilderness Review. Release 8-66. BLM, Washington, DC. July 5, 1995. 74 pp.

FORESTRY (F)

Standard Operating Procedures

F-1: No fuel wood cutting of live trees will be allowed for cottonwood, willow, alder; unless resource objectives allow otherwise.

F-2: No forestry harvest or collection of products will be allowed during the winter closure timing restraints (November 30 – May 1).

F-3: Trees marked for wildlife protection and/or "Seed Tree Do Not Fall" will not be allowed to be harvested for any type of forestry products.

F-4: Harvest plans will be completed on all commercial sales within woodlands and forests, showing access roads, decks and skid trail locations. Approval of these plans by the BLM Authorized Officer is required before harvest can start.

Best Management Practices

F-5: The closure of new roads will be considered and planned for during sale preparation in accordance with existing policy.

F-6: Clear cuts will be considered for use in the pinyon-juniper and aspen types in critical big game winter ranges and other areas where economically feasible.

F-7: Clear cuts will be considered for use in restoring aspen sites.

F-8: Cuts that thin the pinyon-juniper canopy cover to 20 percent or less will be favored for use in bighorn sheep ranges. These cuts will focus on the smaller trees in the stand,

F-9: Large conifer seed trees (three to seven trees per acre) will be left where practical as wildlife shelter on south facing slopes of big game winter ranges to ensure the succession of quality snags.

F-10: An average of three to seven trees per acre of the largest nonhazardous snags, particularly those adjacent to openings and open water will be left on commercial sale areas.

F-11: Sale areas with less than 15 percent ground cover in the understory on critical deer and elk winter ranges will be seeded using a mixture of grasses, forbs, and shrubs and will be paid for with wildlife funds.

F-12: Minimum of 180 year rotation will be allowed for pinyon-juniper stands. Other species will be managed on a rotation of sufficient length to produce cavity trees for flickers and small owls.

F-13: A minimum 50 foot buffer will be maintained along all riparian areas.

F-14: Snags with existing cavities or nests will be priority for retention.

F-15: Snag diameter for retention will be the largest class on site and will be retained in clusters if possible.

F-16: If site potential allows, will retain 5-7 snags per acre, preferably in a clumped configuration.

F-17: If possible, will retain at least 15 live trees per acre for future snag recruitment. Recruitment snags will not have to be structurally superior; live tree with forked and broken tops may be preferred.

F-18: Do not disturb or destroy active or inactive nests of raptors which are reused.

F-19: Avoid heavy equipment use in stands of cottonwood, willow, and alder. If heavy equipment use is necessary, allow on a case by case basis and mitigate for adverse impacts.

F-20: Allow dead and down collection of cottonwood for personal use.

F-21: Protect seed and important wildlife habitat trees in pinyon-juniper stands.

F-22: Allow removal of pinyon-juniper encroachment utilizing mechanical, biological, and chemical treatments. Allow tree harvesting for Christmas trees and transplants other woodland products and biomass reduction.

F-23: Minimize disturbance to the soil such that surface runoff does not result in sediment transport into waterbodies. Concentrate skidding on as few skid trails as needed.

F-24: Limit primary skid trails to 10 percent of the total working area.

F-25: Avoid widespread or random skidding patterns with repeated passes.

F-26: Minimize placement and use of skid trails in ephemeral drainages. If skid trails must be within or cross an ephemeral drainage, additional BMPs are needed to protect water quality.

F-27: Minimize the extent of gouges or trenches upon the ground surface that are created by the skidding of trees or logs.

F-28: On sloping terrain, skid trails shall follow along the land contours and shall be kept to 25 percent grade or less when practical.

F-29: Establish decks at locations where soil disturbance is minimized.

F-30: Maintain as close to normal (pre-construction) streamflow by maintaining depth, width, gradient and capacity of the stream channel at the crossing.

F-31: Perform construction, installation, and removal work during low-water flow if circumstances allow.

F-32: Stabilize the approachways and/or stream crossing locations so sediment is not transported into the stream.

F-33: Approaches to the stream are relatively flat to better control runoff.

F-34: The crossing can be installed at a right-angle (90 degrees) to the stream channel so crossing distance is minimized.

F-35: Any trees removed during these processes will be purchased by the applicant prior to construction. The applicant is responsible for a per-cord fee.

Guidelines for Christmas Tree and Firewood Harvesting

F-36: Vehicle use is restricted to existing roads and trails. Do not drive off road.

F-37: Do not damage adjacent trees.

F-38: When cutting down standing trees, cut the stump 12 inches or less, or as close to the ground as possible.

F-39: Scatter lopped branches at least 50 feet from the stump.

F-40: Do not top a larger tree to obtain a Christmas tree.

F-41: Do not harvest any trees within 100 feet of a spring or creek unless trees are identified for selective removal to meet resource objectives.

F-42: Please pack out your trash as well as trash left by others.

F-43: No harvesting when soils are saturated to a depth of 3 inches to prevent damage to roads.

F-44: The GJFO closes annually to firewood harvesting on November 30. Firewood harvesting reopens in the spring based on road conditions.

LIVESTOCK GRAZING

Standard Operating Procedures

LG-1: Follow the Grazing Guidelines established along with the Colorado Standards for Rangeland Health.

LG-2: Protect seedings from grazing for one full year and through the growing season of the second year. Some seedings established during adverse weather cycles may need protection for a longer period.

LG-3: New fences shall be constructed to BLM standards allowing for the appropriate wildlife passage. Fences constructed will comply with applicable wildlife fence standards, such as those described in BLM Handbook H-1741-1, Fencing (BLM 1989).

LG-4: Bird and wildlife ramps shall be installed in all troughs.

LG-5: Access routes to functioning range improvements shall be retained to allow for periodic maintenance and prevent cross country travel.

LG-6: Continue to maintain range improvement projects to support proper livestock management including optimal distribution.

LG-7: Rangeland and vegetation monitoring will be conducted to detect changes in grazing use, trend, and range conditions. These data will be used to support and direct grazing management decisions. These efforts will help ensure that livestock grazing meets objectives for rangeland health and resolves conflicts with wildlife or other resources.

LG-8: Grazing management decisions will be based on inventory and monitoring data, both short-term and long-term, which will be jointly developed by grazing permittees and the appropriate federal land management agency.

LG-9: All water development activities for livestock grazing use that exceed the minimum depletion level established by US Fish and Wildlife Service must comply with all US Fish and Wildlife Service fees and prescribed mitigations to offset water depletion in the Colorado River.

LG-10: Surface-disturbing activities will be coordinated with livestock grazing permittees to minimize the effects of the surface disturbance on other approved operations. To the maximum extent practicable, this effort will include consulting on scheduling of operations to mutually minimize effects.

LG-11: Any damage to the function of range improvements (e.g., fence damage, cattle guard cleaning, livestock loss) from other approved operations will be repaired immediately or remedied by the operator causing the damage.

LG-12: Well pads, pits, and other facilities that could be hazardous to livestock will be fenced to keep livestock out and the fences maintained in functioning condition.

Best Management Practices

LG-13: Development of springs and seeps or other projects affecting water and associated resources shall be designed to maintain the associate riparian area and assure attainment of standards.

LG-14: Disturbance to established rangeland study sites shall be avoided to provide for the continuation of monitoring efforts which involves comparisons of data to previous records of that site.

LG-15: Facilities shall be constructed a minimum of 0.125-mile from livestock gathering spots such as water sources and gathering facilities to prevent disruption of the use of these facilities and potential damage to the facility by livestock.

LG-16: Exclosures may be established in areas where the vegetative potential of the area is questionable or to compare the effectiveness of grazing management.

LG-17: Livestock grazing could be used as an intensively managed prescriptive grazing practice to control cheatgrass and noxious or invasive weeds.

LG-18: Use grazing systems that contain rotation, deferment, and rest to produce a mosaic of habitat patches and increases the density, height and distribution of native plants.

LG-19: Rotate livestock use areas year to year – avoid grazing in the same place at the same time each year.

LG-20: Avoid re-grazing the same plants in one growing season.

LG-21: Adjust grazing seasons to benefit both warm and cool season grass species by providing periodic rest from grazing for each type.

LG-22: Avoid grazing an area during the spring and fall period in one year's time.

LG-23: Allow for adequate litter cover following grazing use to protect soil surface and enhance soil moisture retention.

LG-24: For spring grazing ensure livestock are removed early enough so that sufficient soil moisture remains for plant recovery.

LG-25: Allow for rest/recovery periods before or after grazing during critical growth periods. Recovery shall include the production of seed to allow for the regeneration of desirable plant species.

LG-26: Occasional grazing use during the dormant season will provide rest during the growing season and will allow plants to recover.

LG-27: Adjust intensity, timing and/or duration of grazing during periods of drought.

LG-28: Manage livestock grazing, including dormant season use, to ensure adequate residual grass cover remains when soil moisture or wildlife habitat is of concern.

LG-29: Proper utilization allows stubble for root and crown protection, litter accumulation for organic matter contribution to the soil, cover and habitat for wildlife and forage availability for grazing animals utilizing the area. Generally utilization levels shall be based upon recovery periods and other resource objectives. Suggested utilization guidelines would be:

a) In areas Not Meeting Land Health Standards and cattle grazing is a causative factor, limit utilization on key species to 30 percent during the critical growth period and 40percent during the dormant season.

b) In areas Meeting Land Health Standards limit utilization on key species to 40 percent during the critical growth period and 50 percent during the dormant season.

c) If wildlife/livestock conflicts exist annual utilization would be read before the next seasons growth begins to account for all uses and demands on the plants.

d) The exception to these guidelines is if the permittee can convince the authorized officer that they have the knowledge, ability and commitment to implement a grazing system that should result in improvements to the ecosystem.

LG-30: Limit use in areas of valuable woody plants during times when they are selected.

LG-31: Avoid the following grazing management practices:

a) Long seasonal use with no recovery time;

b) Heavy use that stresses plants;

c) Little or no re-growth before winter - little stubble for root crown protection;

d) Use at the same time every year - repeating the stress;

e) No rest or growing season recovery - little recovery with long seasons of use;

f) Little or ineffective herding;

g) Salt placed in the same locations year after year;

h) Livestock left behind after pasture moves; and

i) Grazing during the critical growth period year after year.

LG-32: When using livestock to control noxious or invasive weeds, match animal dietary preference or tolerance to the target species.

LG-33: Use the target weed's phenology when developing a grazing strategy.

LG-34: Manage heavy grazing on target weed species to account for any intermixed desirable species.

Vegetation/Riparian Zone Grazing Management Guidelines

LG-35: To reduce negative impacts to grazing, determine the critical period(s) of a riparian site, and then limit grazing during the critical period(s) to no more often than once every three or four years. Critical periods and impacts are likely to be either in late spring-early summer, when stream banks are more easily broken down by trampling; or late summer-early fall, when excessive browsing man damage vegetation. Each site has its own critical period that shall be

individually determined. Important critical period variables are soil moisture, plant species composition, and animal behavior patterns. Site may be grazed every year if use does not occur during the critical period(s). Extended periods of rest or deferment from grazing may be needed to enable recovery of badly degraded sites. Graze earlier in the season when cattle use uplands (Mosley et al. 1997)

LG-36: To maintain stream bank stability, limit cattle access to surface water when adjacent stream banks and shorelines are overly wet and susceptible to trampling and sloughing. Stream bank trampling can often be reduced by capitalizing on the natural foraging behavior of cattle. Cattle generally avoid grazing excessively wet sites or in cold-air pockets. Cattle seek out wind-swept ridges, and they graze on upland forage when it is more palatable than forage in riparian areas. Avoid hot season grazing of riparian areas. (Mosley et al. 1997)

LG-37: To graze a site more than once per growing season, moisture and temperature conditions shall be conducive to plant growth. For such sites, allow a recovery period of at least 30 to 60 days, depending on vegetation type, before re-grazing within the same growing season. Grazing more often and for shorter periods-that is, 3 weeks or less at a time-is preferable to fewer and longer grazing periods. (Mosley et al. 1997)

LG-38: To control the timing, frequency, and intensity of cattle grazing, consider creating smaller riparian pastures with similar, or homogonous, features. Adjusting timing, frequency, and intensity of grazing in individual pasture units is more important than adopting a formalized grazing season. (Mosley et al. 1997)

LG-39: To protect stream banks, prevent cattle from congregation near surface waters; fencing, supplemental feeding, and herding methods work best. Provide remote watering systems for cattle. Manage the riparian area as a separate and unique pasture. Inappropriate cattle grazing will usually first be evidenced by excessive physical disturbance to stream banks and shorelines (Mosley et al. 1997)

LG-40: On riparian areas that are determined to be non-functioning or functioning at risk as a result of livestock grazing impacts, limits of bank disturbance will be determined and included within the *Terms and Conditions* of the Grazing Permit.

LG-41: In general, utilization standards in riparian areas should be no more than 30 percent use of current the year's growth on woody species and a minimum of 4 inches of stubble height shall remain at the end of the grazing period.

LG-42: To protect stream banks, discourage trailing up and down the channel by placing logs across trails, perpendicular to the stream channel.

LG-43: Adjust intensity, timing and/or duration of grazing during periods of drought.

References

BLM Handbook H-1741-1, Fencing (BLM 1989)

Mosley, J.C., P.C. Cook, A.J. Griffis, and J. O'Laughlin. 1997. Guidelines for Managing Cattle Grazing in Riparian Areas to Protect Water Quality: Review of Research and Best Management Practices Policy. Report No. 15. University of Idaho, Moscow, ID. December 1997.

RECREATION (REC)

Standard Operating Procedures and Best Management Practices

GJFO recreation management relies heavily on community partnerships and employs the basic concept of the four E's - Engineering, Education, Enforcement and Evaluation. Partnerships and the four E's provide an effective recreation management framework. The following SOPs and BMPs are categorized using that framework. The following SOPs and BMPs are arranged to correspond with those four general categories.

Partnerships

REC-1: Develop and maintain partnerships with recreation-based organizations and service providers. These partnerships should engage partners in the planning, implementation and monitoring of recreation opportunities and facilities on BLM-managed public lands.

REC-2: Administer ERMAs and SRMAs (and associated RMZs) cooperatively through partnership agreements (example memorandum of understanding) between managing partners (e.g. recreation organizations, municipal governments) and the BLM GJFO that outline administrative roles and responsibilities.

REC-3: Consider administering specific recreation facilities (e.g. campgrounds) cooperatively through partnership agreements with partner organizations or businesses.

Recreation Facilities and Trails (Engineering)

REC-4: Utilize current GJFO "Trail Development Process" and "Trail Design Criteria" guidance (see Appendix M) to create and maintain a sustainable recreational route system that helps achieve recreation and other resource use objectives while protecting natural and cultural resources. (BLM 2014 and 2005).

REC-5: Reroute or close trails that create resource damage and/or trespass on private property.

REC-6: For recreation facility development utilize the BLM Guidelines for a Quality Built Environment manual (BLM 2010)

REC-7: Develop and maintain recreation visitor use data monitoring systems to track visitor use trends.

REC-8: Work with targeted recreation users and managing partners to protect and enhance targeted recreation opportunities in ERMAs and SRMAs.

REC-9: Work with partners (e.g., recreation organizations, municipal governments) to develop connectivity to adjoining urban trails to provide safe access to public lands, alternative transportation options, and improved recreational opportunities.

REC-10: In ERMAs, avoid management actions that attract or concentrate recreation use at sites of other authorized uses (e.g. camping near stock ponds.)

REC-11: In ERMAs, locate new recreation facility developments so as to mitigate recreation impacts on other resource uses and developments.

REC-12: In SRMAs, locate new developments for other resource uses so as to mitigate impacts to targeted recreation resources.

REC-13: Develop recreation facilities at primary access points that may include, but are not limited to, parking/staging areas that accommodate targeted users, vault toilets, informational kiosks and shade shelters.

REC-14: Work with private landowners and recreationists to avoid trespass issues where public and private lands interface.

REC-15: Work with community partners, and utility permit applicants to minimize the impact to recreation from utility developments in ROW corridors and/or Renewable Energy Emphasis areas (wind and solar) that overlap ERMAs and SRMAs.

REC-16: Use guidance from EPA "Best Management Practices for Lead at Outdoor Shooting Ranges" (EPA 2005) in areas where intensive recreational target shooting occurs.

Recreation Information and Education

REC-17: Provide clear, consistent, and standardized messaging to the public regarding recreation opportunities and regulations on BLM-managed public lands. This messaging should be included in digital communications (websites,

social media), print media (brochures, kiosk displays), signage, and personal contacts with recreation customers (office visits, phone calls, field contacts).

REC-18: Utilize information portals (e.g. information/education kiosks, signs, brochures, maps, websites) and management strategies (i.e. onsite staff and/or volunteer information, education, and enforcement patrols) to inform recreation participants about targeted recreation opportunities in ERMAs and SRMAs.

REC-19: Clearly identify primary access points to recreation areas both onsite (signs and developed recreation facilities) and offsite (digital and print media, recreation service providers.)

REC-20: In ERMAs, utilize information portals (e.g. information/education kiosks, signs, brochures, maps, websites) and management strategies (e.g. onsite staff and/or volunteer information, education, and enforcement patrols) to inform recreation participants about other resource uses in the area, and appropriate recreation behavior that mitigates impacts to operations and facilities of other resource uses.

REC-21: Work with cooperators and partners to provide visitor information and education resources that help achieve area recreation management objectives and the objectives of adjoining or overlapping designations (e.g. WSAs, LWC units, ACECs, wildlife emphasis areas and RMAs).

REC-22: Work with managing partners (local clubs, businesses and municipalities) to develop appropriate marketing strategies and informational materials (e.g. maps, brochures) that help achieve specific recreation management objectives.

REC-23: Clearly identify RMA/RMZ boundaries using a variety of communication tools and/or barriers including, but not limited to, digital and/or print media, signs and/or fencing, and natural topographic features. Boundary identification strategies should generally employ the most practical, cost-effective, and least obtrusive materials and methods that are still effective for attaining desired management results. For example, periodic boundary identification signs may be sufficient to contain use along portions of an RMZ boundary. If signing alone proves ineffective, fencing or other physical barriers can be installed.

REC-24 : In areas where intensive recreational target shooting occurs, work with volunteers and managing partners to develop and communicate shooting range safety rules, etiquette and stewardship messages.

REC-25: Promote the seven standard principles of Leave No Trace (www.lnt.org) outdoor ethics through print and electronic media, and through

personal communications with recreationists participating in non-motorized recreation activities on BLM-managed public lands.

REC-26: Promote the principles of Tread Lightly (www.treadlightly.org) outdoor ethics through print and electronic media, and through personal communications with recreationists participating in recreation activities on BLM-managed public lands.

Recreation Monitoring (Enforcement and Evaluation)

REC-27: Special Recreation Permits will contain noxious weed management stipulations (e.g., pre-event inventories to avoid infested areas, event management to avoid or isolate activities that could cause weed introduction or spread, monitoring and treatment of infestations exacerbated by the activity, and other appropriate noxious weed management stipulations).

REC-28: Lands may be temporarily closed to other uses during recreation events performed under special recreation permit (e.g., equestrian endurance rides or motorcycle events).

REC-29: In SRMAs, monitor outcome attainment and preferences through customer assessments (e.g. focus group interviews of visitor studies) on five year intervals or as funding allows. Monitor activity participation and RSCs annually during the primary use season of mid-April through October.

REC-30: Manage recreation to minimize or prevent adverse effects to biological and cultural resources using the Recreation Guidelines to Meet Public Land Health Standards on Bureau of Land Management Lands in Colorado (BLM 2000).

REC-31: Ensure all recreation management actions in areas overlapping ACECs help protect the relevance and importance criteria of those ACECs. Conduct social and physical monitoring to determine if recreation use is consistent with specific ACEC goals, objectives and resource protection measures. Promote stewardship of ACEC resources by providing opportunities for visitors to learn about those resources.

REC-32: Adapt specific recreation regulations (e.g. camping stay limits) if monitoring indicates that recreation use is causing unacceptable resource damage or is compromising achievement of recreation or other resource use objectives.

REC-33: Coordinate with partner groups to complete resource monitoring requirements.

References

BLM. 2000. Recreation Management Guidelines to Meet Public Land Health Standards on Bureau of Land Management Lands in Colorado. Lakewood, CO. Bureau of Land Management. December 2000. Available online at: http://www.blm.gov/co/st/en/BLM_Information/newsroom/2000/recguidefnr/guide_final.html)

BLM. 2005.Grand Junction Field Office. "Trail Design Criteria."

BLM. 2010. Guidelines for a Quality Built Environment, First Edition, December 2010

BLM. Grand Junction Field Office, 2014. "Trail Development Process." (in progress)

United States Environmental Protection Agency. 2005. Best Management Practices for Lead at Outdoor Shooting Ranges, EPA-902-B-01-001 Revised June 2005 Region 2

LANDS AND REALTY (LR)

Standard Operating Procedures

LR-1: Power lines shall be constructed in accordance to standards outlined in "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996" (Avian Power Line Interaction Committee 2006). Right-of-way applicants shall assume the burden and expense of proving that proposed pole designs not shown in the above publication are "raptor safe." Such proof shall be provided by a raptor expert approved by the BLM Authorized Officer.

LR-2: Rights-of-way and other lands and realty authorizations, including power lines, pipelines, transmission corridors, energy development sites and related development, and gravel pits, will contain noxious and invasive plant management terms or stipulations for all ground-disturbing actions. These will include conducting a pre-disturbance noxious weed inventory, designing to avoid or minimize vegetation removal and weed introduction or spread, managing weeds during the life of the right-of-way or authorization to prevent or minimize weed introduction or spread, abandoning the right-of-way or authorization to establish competitive vegetation on bare ground areas, and monitoring revegetation success and weed prevention and control for a reasonable number of years.

LR-3: Rights-of-way will be constructed to avoid physical damage to range improvements and rangeland study areas.

LR-4: The right-of-way holder shall notify the BLM Authorized Officer at least 48 hours prior to the commencement construction, reclamation, maintenance, or any surface-disturbing activities under this grant. LR

LR-5: Copies of the right-of-way grant with the stipulations shall be kept on site during construction and maintenance activities. All construction personnel shall review the grant and stipulations before working on the right-of-way or permitted area.

LR-6: All facilities shall be labeled with the authorization number, operator, and contact information.

LR-7: No signs or advertising devices shall be placed on the premises or on adjacent public lands, except those posted by or at the direction of the BLM Authorized Officer.

LR-8: The Holder shall promptly remove and dispose of all waste caused by its activities. The term "waste" as used herein means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, petroleum products, ashes, and equipment. No burning of trash, trees, brush, or any other material shall be allowed.

LR-9: The Proponent (applying for new ROW) shall notify all existing right-of-way holders in the project area prior to beginning any surface-disturbance or construction activities. The Holder shall obtain an agreement with any existing right-of-way holders or other parties with authorized facilities that cross or are adjacent to those of the holder to assure that no damage to an existing right-of-way or authorized facility will occur. The agreement(s) shall be obtained prior to any use of the right-of-way or existing facility.

LR-10: The Holder shall participate in the formation of a Road User's Association for the road if new rights-of-way are granted for use of the existing road. All new users will be required to join the association.

LR-11: The Holder will provide a performance bond for the authorized facility, acceptable to the BLM Authorized Officer, in the amount of $(_) that must be maintained in effect until restoration of the right-of-way has been accepted by the BLM Authorized Officer. The bond shall be furnished by the holder within 30 days of signing the grant (___) and shall be applied to all additional authorizations associated with the project as necessary.

LR-12: Incorporate conditions of approval and mitigation measures from the Final Programmatic EIS on Wind Energy Development on BLM-administered Lands in the Western US, as applicable (BLM 2005).

LR-13: Incorporate conditions of approval and mitigation measures from the Solar Energy PEIS, as applicable (*pending completion of Solar PEIS*).

LR-14: All construction activities shall be confined to the minimum area necessary. The exterior boundaries of the construction area shall be clearly flagged prior to any surface-disturbing activities.

LR-15: Existing roads will be used wherever possible. Additional roads shall be kept to the minimum. Route locations must be approved by the BLM prior to construction.

LR-16: When blasting is necessary, the following precautions will be used:

a) In areas of human use, blasting blankets will be used.

b) Landowners or tenants in close proximity to the blasting will be notified in advance of the blasting so that livestock and other property can be adequately protected.

c) Access to the blasting area will be restricted by construction personnel stationed at each end of the area to be blasted.

d) Blasting within 0.25-mile of federally-owned or controlled springs and flowing water wells must be approved in writing by the area manager.

e) No blasting will be permitted within 0.25-mile of historic trails, natural areas, identified archaeological sites, and recreation areas.

f) Powder magazines will be located out of sight or at least 0.5-mile from roads. Loaded shot holes will not be left unattended. Approval from the area manager will be obtained for the magazine locations.

LR-17: **(MLP)** Roads will be constructed and maintained to BLM road standards [BLM Manual 9113 (BLM 2011a)]. All vehicle travel will be within the approved driving surface.

Standard Operating Procedures for Pipeline Projects

LR-18: A preconstruction field conference shall be requested by the grantee at least five working days prior to any construction activities unless otherwise agreed upon by the BLM Authorized Officer.

LR-19: Once the pipeline is constructed, the grantee/operator shall restore the existing roadway to meet or exceed conditions prior to construction. The preconstruction width of the driving surface shall also be restored and erosion control structure installed subject to approval of the BLM Authorized Officer. The grantee/operator shall be responsible for road maintenance from the beginning to completion of operations. This may include, but not be limited to, blading the roadway, cleaning ditches and drainage facilities, dust abatement, or other requirements as directed by the BLM Authorized Officer.

LR-20: Construction width shall include the existing road. The pipeline shall be located two to three feet from the edge of the ditch along the existing road. The existing road shall be on the working side of the trench.

LR-21: The grantee shall accomplish the crossing of the pipeline owned by (company name) in accordance with an agreement between the grantee/operator.

LR-22: Pipeline location warning signs shall be installed within five days of construction completion. Each sign shall be permanently marked with the right-of-way serial number.

Standard Operating Procedures for Geophysical Exploration

LR-23: The operator will furnish a map with the Notice of Intent showing approximate line to be used. A map will also be filed with the Notice of Completion showing the completed line. The map will be of a minimum scale of 0.5-inch equals 1.0 mile.

LR-24: Rehabilitation of disturbed areas is to be done concurrent with the geophysical operations.

LR-25: Blasting or vibrating within 0.25-mile of federally-owned or controlled springs and flowing water wells or cultural resource sites must be approved in writing by the area manager.

LR-26: Plugging of drill holes will conform to the Colorado Reclamation Standards Abandoned Drill Holes Act. Drill hole cuttings will be returned to the hole.

LR-27: No blading or other dirt work will be allowed without written permission from the area manager.

LR-28: Standard Terms and Conditions described in BLM Handbook H-3150-1: Onshore Oil and Gas Geophysical Exploration Surface Management Requirements (BLM 1994 Rev. 2007).

Best Management Practices

LR-29: Coordinate with the Colorado Parks and Wildlife early in the sale process on proposals to sell public land encumbered by a small capacity wildlife water development.

References

Avian Power Line Interaction Committee. 2006. Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996. Edison Electric Institute, Avian Power Line Interaction Committee, and the California Energy Commission. Washington, DC, and Sacramento, CA.

BLM. 2011a. H-9113-1 Road Design Handbook. Bureau of Land Management, Washington, D.C.

_____. 1994. BLM Handbook H-3150-1: Onshore Oil and Gas Geophysical Exploration Surface Management Requirements. BLM, Washington, DC. Rev. 2007.

_____. 2005. Bureau of Land Management Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States. BLM, Washington, DC. June 2005.

MINERALS AND ENERGY (M&E)

Actions involving minerals and energy are governed by:

- Minerals Leasing Act of 1920 (30 U.S.C 181 *et seq*);
- Federal Oil and Gas Royalty Management Act (30 U.S.C. 1718(b));
- Federal Onshore Oil and Gas Leasing Reform Act (30 U.S.C. 226(g));
- 43 CFR 8900 et seq.
- Federal On Shore Orders 1-7
- 43 CFR 3809 Regulations (Locatable Minerals Management)

Standard Operating Procedures

Standard Operating Procedures are measures that are required in most circumstances. Some are based on laws and policy while others are specific to the planning area to achieve resource management objectives.

Geophysical Exploration

M&E-1: If operations open an existing fence, temporary gates will be installed for use during the course of operations, or the fence will be immediately repaired. On completion of operations, fences will be restored to their original condition or better.

M&E-2: When saturated soil conditions exist on access roads or location, or when road rutting becomes deeper than 3 inches, construction shall be halted until soil material dries out or is frozen sufficiently for construction to proceed without undue damage and erosion to soils, roads, and locations.

M&E-3: For geophysical operations, specialized low surface impact equipment (wide- or balloon-tired vehicles, all-terrain vehicles) or helicopters may be used for activities in off-road areas to protect fragile soils and or other resource values.

M&E-4: Prohibit the use of subsurface explosives and vibrosis buggies within 0.25 miles of all spring sources and perennial streams.

M&E-5: Powder magazines will be located at least a mile from traveled roads, unless otherwise authorized after analysis or review. Loaded shot holes and charges will be attended at all times.

M&E-6: Materials or equipment related to project activities (e.g., trash, flagging, lath) will be removed to an authorized disposal site.

M&E-7: Project materials which could be a hazard to public health, safety or resource values will be stored in appropriate secondary containment. No oil or lubricants will be drained onto the ground surface.

M&E-8: Shot-hole cuttings will be returned to the hole, or an alternative plan will be submitted for BLM approval.

Reducing Fluid Mineral Development Footprint

M&E-9: Surface disturbing actions will be sensitive to natural resource protection. When surface disturbance in sensitive areas is unavoidable, they will be minimized to the greatest extent practicable, especially near drainage features and on soils mapped as being saline (see Glossary).

M&E-10: Utilities such as gas and water lines, power lines and roads will be located in common corridors where practicable.

Administrative / General and Planning

M&E-11: **(MLP)** Consider site specific soil and vegetative characteristics and reclamation potential in project design and layout.

M&E-12: **(MLP)** Design and construct energy service roads to a safe and appropriate standard, no higher than necessary to accommodate their intended use.

M&E-13: **(MLP)** Locate and construct roads and other linear facilities to follow the contour of the landform or mimic lines in the vegetation.

M&E-14: **(MLP)** A pre-construction meeting will be held with the BLM before and to facilitate implementation of plans and ensure compliance with stipulations or conditions of approval. The BLM will be notified at least 48 hours prior to construction or reclamation work.

M&E-15: By November 1 each year, companies will provide georeferenced spatial data depicting as-built locations of all facilities, wells, roads, pipelines, power lines, reservoirs, discharge points, and other related facilities to the BLM for all Master Development Plans where construction and development have been completed.

M&E-16: Where winter range areas are not protected by lease stipulations, operations such as construction, drilling, completion, work-overs and other

intensive activities will be avoided from January 1 to March 1 to minimize impacts to wintering big game.

M&E-17: Before activities take place, every pad, access road, or facility site will have an approved surface drainage plan (storm water management plan) for establishing positive management of surface water drainage, to reduce erosion and sediment transport. The drainage plan will include adaptive BMPs, monitoring, maintenance and reporting. BMPs may include run-on/run-off controls such as surface pocking or revegetation, ditches or berms, basins, and other control methods to reduce erosion. Pre-construction drainage BMPs will be installed as appropriate.

M&E-18: **(MLP)** Before surface disturbance, agreements will be obtained with all existing rights-of-way holders, authorized users and pipeline operators affected by permitted activities. If Agreement cannot be reached, the operator will comply with the law or regulations.

M&E-19: Disclosure of hydraulic fracture fluids per COGCC rule 205A will be done using FracFocus.org 30 days following the conclusion of the hydraulic fracturing treatment and in no case later than 90 days after the commencement of such hydraulic fracturing treatment.

Pre-Construction

M&E-20: Stakes, snow fence or flagging will be installed to mark boundaries of permitted areas of disturbance, including pre-construction BMPs and soils storage areas and be maintained in place until final construction cleanup is completed.

M&E-21: **(MLP)** Pre-construction drainage BMPs will be installed as appropriate, per the approved surface/storm drainage water management, plan to protect stream drainages and to reduce erosion and sediment transport.

M&E-22: **(MLP)** Surveys for raptor nests, sensitive plant and animal species and cultural resources will be conducted prior to construction activities following BLM survey standards. Survey results will be submitted to the BLM for analysis and recommendations before project approval.

Construction

M&E-23: **(MLP)** All routes shall be built and maintained to BLM Manual Section 9113 standards for road shape and drainage features (BLM 2011a) or where appropriate BLM Manual Section 9116 standards for primitive roads. For drainage crossings, culverts should be sized for the 50 year storm event with no static head and to pass a 100-year event without failing. Site specific conditions may warrant BLM to require designs for larger events (e.g. 75-100 year storm events). Large culverts and bridges shall be designed and constructed per BLM Manual 9112 (large culverts and bridges) (BLM 2009a). Large culverts and bridges shall be designed to pass a 100-year storm event (minimum).

M&E-24: As detailed in the site plan for surface/storm water management, drainage from disturbed areas will be confined or directed to minimize erosion, particularly within 100 feet of all drainages. No runoff, including that from roads, will be allowed to flow into intermittent or perennial waterways without first passing through sediment-trapping mechanisms such as vegetation, anchored bales or catchments.

M&E-25: **(MLP)** Topsoil stripping will include all growth medium present at a site (following initial clearing of large trees, etc.), as indicated by color or texture. Stripping and storage depth may be specified during the onsite inspection. All stripped topsoil /growth medium will be salvaged, segregated and stored in a manner that extends biological viability and protects it from loss. Topsoil and all growth medium will be replaced prior to seedbed preparation. No topsoil will be stripped or segregated when soils are saturated or frozen below the stripping depth.

M&E-26: **(MLP)** Access roads requiring construction with cut and fill will minimize surface disturbance and consider the character of the landform's contours, visual contrasts, the cut materials, the depth of cut, where the fill material will be deposited and other resource concerns.

M&E-27: **(MLP)** Fill material will not be cast over hilltops or into drainages without BLM approval.

M&E-28: **(MLP)** When saturated soil conditions existing on access roads or location, or when road rutting becomes deeper than 3 inches, construction shall be halted until soil material dries out or is frozen sufficiently for construction to proceed without undue damage and erosion to soils, roads and locations.

M&E-29: **(MLP)** Construction activities at drainage crossings (e.g., burying pipelines, installing culverts) will be timed to avoid high flow conditions. Construction activities that affect stream flow will consist of either a piped stream diversion or the use of a coffer dam and pump to divert flow around the disturbed area.

M&E-30: **(MLP)** When activity in a wetland is unavoidable, the operator will reduce impacts through the use of oak or HDP mats and will restore all temporarily disturbed wetlands or riparian areas, consulting with the BLM to determine appropriate mitigation, including verification of native plant species to be used in restoration.

M&E-31: **(MLP)** All stream crossings affecting perennial streams or streams supporting riparian habitat shall be professionally engineered (design, construction, and maintenance).

M&E-32: **(MLP)** Where the access road crosses small drainages and intermittent streams not requiring culverts, low water crossings shall be used.

The road will dip to the original streambed elevation of the drainage and the crossing will prevent any blockage or restriction of the existing channel. Material moved from the banks of the crossing will be stockpiled nearby for later use in reclamation. Gravel, riprap, or concrete bottoms may be required in some situations.

M&E-33: **(MLP)** All pipeline welds within 100 feet of a perennial stream will be x-rayed to prevent leakage into the stream. Where pipelines cross streams that support Federal or State-listed threatened or endangered species or BLM-listed sensitive species, additional safeguards such as double-walled pipe, and remotely-actuated block or check valves on both sides of the stream may be used.

M&E-34: **(MLP)** Water from hydrostatic testing of pipelines will be filtered of sediments prior to discharge. Energy dissipating methods such as straw-bales, wattles, and vegetative buffers will be in place before any discharge of water.

M&E-35: **(MLP)** Baseline information of channel characteristics and riparian vegetation present must be documented before actions are permitted to disturb riparian areas and the stream channel.

Drilling

M&E-36: **(MLP)** Pits that may contain liquid, such as reserve pits, produced water pits, frac-water pits, cuttings trenches (if covered by water/fluid), and evaporation pits, will install and maintain netting to prevent entry or use by migratory birds. They will be fenced on three sides before drilling activity and closed off on the fourth side after drilling is completed.

M&E-37: If any pit that may contain liquid is constructed with a slope steeper than 3:1, or if the pit is lined, escape ramps will be installed every 50 feet along the pit slope and at each corner to allow escape by livestock and wildlife

M&E-38: Fluids will be confined to pits and all pits that may contain liquids will be lined to protect groundwater. Liners will be maintained in good condition, with no tears or holes, until they are removed when the reserve pit is closed.

M&E-39: Pits will be constructed so that water will not run into them. Fluid levels will be maintained below 2 feet of the lowest point of containment.

Utilization and Production

M&E-40: Operations will not damage, disrupt or interfere with water flows and/or improvements associated with springs, wells, or impoundments.

M&E-41: Regularly scheduled road maintenance will include, but not be limited to, crown or slope reconstruction, clean-out of ditches, culverts and catchments, replacement of the road surface and dust abatement.

M&E-42: Well pads and facilities will be kept free of unnecessary equipment, trash and other materials not in current use.

M&E-43: Pits will be promptly drained, tested, closed and reclaimed according to local state and federal regulations.

M&E-44: Dust from vehicular traffic, equipment operations, or wind events will be controlled as needed. No application of surfactants or dust agents will proceed without BLM approval. In areas with soils mapped as Mancos shale, application of water on native road surfaces will be limited, to minimize mobilization of selenium. In such areas, alternate dust abatement measures such as proper road surfacing and maintenance, and speed limits will be used, subject to BLM approval.

M&E-45: Noise will be minimized by methods such as closed compressor buildings to comply with COGCC standards for noise.

M&E-46: **(MLP)** Pipeline warning signs permanently marked with the operator's and owner's names (emergency contact) and purpose (product) of the pipeline will be installed within five days of construction completion and before use of the pipeline for transportation of product.

M&E-47: All production equipment with a chimney, vent, or stack shall be fitted with a device to prevent birds from entering or perching on the chimney, such as an excluder cone or equivalent.

M&E-48: Production facilities will be located and arranged to facilitate safety and maximize areas to be reclaimed.

M&E-49: **(MLP)** All above ground facilities should be painted a natural color selected from the BLM Standard Environmental Color Chart to minimize contrast with adjacent vegetation and/or rock outcrops. Color(s) should be selected in the field at the proposed project location and should be planned for the season with the greatest number of viewers. Selected color(s) should be one to two shades darker than those naturally occurring in the background landscape (this will also help with the effects of fading over time). The operator may need to paint drill rig anchors and those minor working tips and edges of production facilities that are subject to OSHA safety requirements a red, yellow, or orange color.

M&E-50: Standard secondary containment shall hold 110 percent of the capacity the largest single tank it contains and be impervious to any oil, glycol, produced water, or other toxic fluid for 72 hours. Earthen berms must be compacted and of fine material that will prevent seepage of any spill to surrounding area.

M&E-51: All tanks with a capacity of ten (10) barrels or greater shall be labeled or posted with the following information: A. Name of operator; B. Operator's emergency contact telephone number; C. Tank capacity; D. Tank contents; and E. National Fire Protection Association (NFPA) Label. Smaller chemical storage shall be labeled with contents and NFPA label.

M&E-52: All liquids management hoses will be stored inside secondary containment when not in use.

M&E-53: **(MLP)** All open top tanks, catchments or secondary containment vessels will be equipped with sturdy metal screening to prevent access to wildlife of all sizes to prevent entrapment and drowning of small wildlife.

Site Stabilization, Reclamation and Monitoring

M&E-54: Road and pipeline reclamation, including seedbed prep and seeding of temporarily disturbed areas will be completed within 30 days following completion of construction.

M&E-55: **(MLP)** Following completion of pad construction, topsoil storage piles, stormwater control features, and cut-and-fill slopes will be temporarily seeded, to stabilize the materials, maintain biotic soil activities, and minimize weed infestations. When this is not feasible, disturbed surfaces must be stabilized using other methods like hydro-mulch or erosion matting while vegetation is establishing. Seedbed preparation is not generally required for topsoil storage piles or other areas of temporary seeding.

M&E-56: Interim reclamation includes recontouring and revegetating the entire portion of the disturbed area except that part of the well pad needed for production activities.

a) It will be completed within six months following completion of the last well planned for the pad or after a year has passed with no new wells drilled on the pad. All areas unnecessary to production activities will be revegetated, including the area within the remaining rig anchors. In special cases, an exception to this will be requested.

b) Before interim reclamation is scheduled, the operator will meet with BLM to inspect the disturbed area, review the existing reclamation plan, and agree upon any revisions to it.

c) All parts of the area unnecessary for long-term operations will be reshaped to blend with natural topography, covered evenly with topsoil and a seedbed prepared.

d) For cut-and-fill slopes, initial reclamation will typically consist of moving fill material back into cuts, back-filling and reshaping to achieve the configuration specified in the reclamation plan. Compacted areas will be well ripped in two passes at perpendicular

directions. In fragile or loose soils, compaction techniques such as tread-walking may be necessary to prevent high erosion hazard. Topographic contours will be reshaped to blend with natural topography. These may include berms and swales to manage water drainage, support revegetation, mitigate visual impacts and maximize natural appearances.

M&E-57: Seedbed Preparation. Good seedbed preparation is key to soil stabilization, moisture infiltration, and improving the chances for revegetation success.

a) Following contouring, backfilled or ripped surfaces will be covered evenly with topsoil.

b) Within 24 hours of broadcast seeding, the spread topsoil will be roughened by a method such as pitting, raking or harrowing before seeding, to break up any crust that has formed and ensure good seed-to-soil contact.

c) To control erosion and enhance vegetative establishment on slopes steeper than 3:1, or to create a more natural looking landscape in areas of visual sensitivity, seedbed preparation may include pocking or pitting the soil material to form microbasins scaled to the site and materials. These microbasins will be constructed in irregularly spaced and irregularly aligned rows with an orientation perpendicular to the natural flow of runoff down a slope.

d) Requests to use soil amendments, including fertilizer and soil conditioners, will be submitted to the BLM for approval. Submittal will include basic information on the amendment and the purpose of its use.

M&E-58: Seed Mixes. Seed mixes will typically consist of native, early-succession species, or species with the ability to establish quickly in disturbed soil areas. Non-native species considered desirable under special circumstances, such as sterile non-native grasses will be submitted to the BLM for approval before use.

a) Seed mix composition will be calculated based on the number of Pure Live Seed per pound rather than percentage by weight. Seeding rate in pounds per acre will be based on the total number of Pure Live Seeds per square foot.

b) Weed free seed will be used. It will contain no noxious, prohibited, or restricted weed seeds and no more than 0.5 percent by weight of any other weed seeds. Seed may contain up to 2.0 percent of "other crop" seed by weight, including the seed of other agronomic crops and native plants; however, a lower percentage of other crop seed is recommended. To maintain quality, purity, germination, and

yield, only tested, certified seed for the current year, with a minimum germination rate of 80 percent and a minimum purity of 90 percent will be used unless otherwise approved by BLM in advance of purchase. Seed shall be viability-tested in accordance with State law(s) and within nine months before purchase.

c) Seed mixes for temporary use may contain one or more sterile hybrid grasses or other non-native cover crop in addition to native perennial species, if pre-approved by BLM.

d) For private surfaces, BLM-approved seed mixes will be recommended, but the surface landowner has ultimate authority over the seed mix to be used in reclamation.

e) Seed tags or other official documentation of the seed mix will be supplied to the BLM for approval at least 14 days before the date of proposed seeding. Seed that does not meet the above criteria will not be applied to public lands. A Sundry Notice describing the completed work, the weed-free certification, and the seed tag(s) will be submitted BLM within 30 days after seeding.

M&E-59: Seeding Procedures

a) Seeding will be conducted no more than 24 hours following completion of final seedbed preparation (see Seedbed Prep).

b) Where practical, seed will be planted by drill-seeding to a depth of 0.25 to 0.5 inch along the contour of the site. Drill seeding will be followed by culti-paction to enhance seed-to-soil contact and prevent losses of both. Where drill-seeding is impracticable, seed may be installed by broadcast-seeding at twice the drill-seeding rate, followed by raking or harrowing to provide 0.25 to 0.5 inch of soil cover. Hydro-seeding and hydro-mulching may be used in temporary seeding or in areas where drill-seeding or broadcast-seeding/ raking are impracticable. Hydro-seeding and hydro-mulching must be conducted in two separate applications to ensure adequate seed-to-soil contact.

c) If interim revegetation is unsuccessful, reseedings will be repeated annually until satisfactory vegetative cover has been achieved. Requirements for reseeding of temporary areas will be considered on a case-by-case basis. Seeding will be considered successful when the site is protected from erosion and revegetated with a vigorous, self-sustaining, and diverse cover of native (or otherwise approved) plant species. BLM shall not require reseeding during periods that have proven less than optimal.

M&E-60: Mulch

a) Mulch will be applied within 24 hours following completion of seeding. Where areas have been drill- or broadcast-seeded and raked, certified weed-free straw or certified weed-free native grass hay mulch will be crimped into the soil. Hydro-mulching may be used in areas of interim reclamation where crimping is impractical, in areas of interim reclamation that were hydroseeded, and in areas of temporary seeding regardless of seeding method.

b) Mulch will not be applied in areas where erosion potential necessitates use of a biodegradable erosion-control blanket (straw matting).

M&E-61: Cut and fill slopes will be protected against erosion by contour grading, microbasins or other measures approved by the BLM. Well anchored BMPs such as biodegradable matting, weed-free bales or wattles may also be used on cut-and-fill slopes and along drainages to protect against soil movement.

M&E-62: The reclaimed pad will be protected from disturbance by a fence to exclude livestock grazing for the first two growing seasons or until seeded species are firmly established, whichever comes later. Seeded species will be considered firmly established when perennial grass and forb species are at least 80 percent cover of that of the surrounding or reference area.

M&E-63: Monitoring. Because weed and reclamation management activities are components of a long-term process, monitoring and reporting are integral to and long-term commitment to land health.

a) All sites considered as "operator reclamation in progress" will be routinely monitored for reclamation success. Reports will be submitted to the BLM by December 1 of each year. Annual reports will include whether accomplishment of objectives appears likely and of not, what corrective actions are proposed.

b) All sites will be routinely monitored for the presence of noxious weeds or other undesirable plant species as set forth in the joint BLM/US Forest Service Noxious and Invasive Weed Management Plan for Oil and Gas Operators. Pesticide Use Proposals will be approved by the BLM before application of herbicides. Annual weed monitoring reports shall be submitted to the BLM by December 1. They will include weed species found (listed by common names), total acres infested with weeds, total acres treated, treatment methods, and total pounds of active ingredient of pesticides applied. All Noxious Weed Inventory and Pesticide Application records for that year will be included with the report.

M&E-64: Visual Resources

a) Every proposal will include a detailed, site-specific description and plan of how it will meet the VRM Class of the area where it is proposed. As much as possible all proposed features will be located and placed to avoid or minimize visibility from travel corridors, residential areas, and other sensitive observation points.

b) To the extent practical, existing vegetation shall be preserved when clearing and grading for pads, roads, and pipelines. Cleared trees and rocks may be salvaged for redistribution over reshaped cut-and-fill slopes or along linear features.

c) Above-ground facilities will be painted a non-reflective natural color selected to minimize contrast with adjacent vegetation or rock outcrops. Colors may be specified by the BLM on a project-by-project basis.

d) Adaptive management techniques may be applied before or after construction to mitigate straight-line visual contrast effects of pad margins, cut and fill slopes, pipeline alignments or other cleared vegetation. This could include additional tree removal along contrasting edges, to create irregularly shaped openings or more natural-looking mosaic patterns, or treating surfaces to mitigate visual contrasts in color or surface texture.

Best Management Practices

BMPs are adaptive state-of-the-art mitigation measures applied on a site-specific basis to reduce, prevent, or avoid adverse environmental or social impacts. Numerous BMPs for oil and gas development are also incorporated into the general oil and gas development requirements. These include minimizing the number and size of pads through use of multiple well designs and directional drilling; centralizing fracing and water management; minimizing road footprints; centralized support facilities such as tank batteries; collocating utilities and pipelines in common corridors and aligning them along roadways; and implementing intensive interim reclamation practices. The BLM encourages applicants to include in their proposals BMPs such as those identified. If not, BLM will likely require them. Actual BMPs proposed or required during the permitting process to mitigate impacts are expected to vary according to technologies and site-specific needs. BMPs will also be expected to change over the life of a project, being adaptively updated in response to monitoring and changing project conditions. Additional practices could be required or withdrawn, or modified in response to changing activities or future planning. Such adaptive changes to BMPs may generally be implemented without further review or land use planning, but will be analyzed during the NEPA analysis associated with the permitting process. Monitoring and adaptive management practices will help to refine and clarify needed BMPs, consistent with the goals and objectives of this plan.

The listed BMPs are not intended to be complete but to simply offer operators and resource staff examples of commonly used methods to reduce impacts that sometimes result when fluid mineral development occurs. More fluid mineral development BMPs can be found at blm.gov/bmp.

Geophysical Exploration

M&E-65: Specialized low surface impact equipment (wide- or balloon-tired vehicles, all-terrain vehicles) or helicopters may be used for activities in off-road areas to protect fragile soils and or other resource values.

M&E-66: **(MLP)** Pre-mobilization inspection will be performed to insure that all construction equipment and vehicles are clean and free of weeds, weed seed, soil and vegetative material prior to moving onto public lands. Driving through or parking on noxious weed infestations will be avoided.

Reducing Fluid Mineral Development Footprint

M&E-67: **(MLP)** The operator will co-locate multiple wells on well pads and use directional drilling to reduce the number of pads and roads.

M&E-68: **(MLP)** The operator will use centralize completions to reduce the number of truck trips, expense, exhaust emissions and fugitive dust.

M&E-69: **(MLP)** To minimize construction disturbance, truck traffic, dust and other impacts to air quality, soils and wildlife, centralized production facilities will be used for all natural gas liquids and produced water.

M&E-70: **(MLP)** Telemetry will be used to remotely monitor producing wells and facilities to reduce vehicular traffic. During winter closures, unavoidable monitoring and or maintenance activities will be conducted between 9 a.m. and 3 p.m., to the extent practical.

Administrative / General and Planning

M&E-71: **(MLP)** To limit surface disturbance and associated impacts to natural resources, all actions will consider the character of the topography and landform. Deep vertical cuts, long or steep fill slopes and side cuts across steep slopes will be avoided. Rights-of-way will be shared, and structures and facilities will be grouped.

M&E-72: **(MLP)** Drilling will be done with 'closed loop' systems as much as possible, particularly in areas where water resources are most vulnerable, including: soils mapped as alluvial, colluvial, and glacial deposits; near springs and perennial water sources; in important groundwater recharge areas; and within municipal watersheds.

M&E-73: **(MLP)** Chemicals used in the fracturing process will be biodegradable, non-toxic, pH neutral, residual free, non-corrosive, non-polluting and non-hazardous in the forms and concentrations being used. Documentation

in the form of Material Safety Data Sheets will be reviewed by operator for compliance prior to use and Material Safety Data Sheets will remain on site at all times such chemicals are present.

M&E-74: **(MLP)** In municipal watersheds, the operator will develop and implement a Watershed Protection Plan. This plan will characterize baseline hydrologic and hydrogeologic conditions such as but not limited to: water chemistry, water quantity, groundwater flow patterns, connectivity between geologic formations, and communication between surface and groundwater. The operator will collaborate with all watershed stakeholders in development of the plan.

M&E-75: **(MLP)** Adopt BMPs per the BLM and US Forest Service Noxious and Invasive Weed Management Plan for Oil and Gas Operators (BLM and US Forest Service 2007).

M&E-76: Incorporate BMPs and conditions of approval from the Final Programmatic EIS for Geothermal Leasing in the Western US, as applicable (BLM and US Forest Service 2008).

Pre-Construction

M&E-77: **(MLP)** Pre-mobilization inspections will be performed to be sure that all construction equipment and vehicles are clean and free of soils, weeds, weed seed and vegetative material prior to moving onto public lands. Driving through or parking on noxious weed infestations will be avoided.

Construction

M&E-78: **(MLP)** Surface disturbing actions associated with development of fluid minerals will follow Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (commonly referred to as The Gold Book) (BLM 2007b).

M&E-79: **(MLP)** Where feasable, entrances to construction locations will be covered by gravel "track pads" to prevent sediment and weed seeds from being tracked in and out of the site.

M&E-80: **(MLP)** In areas of mapped Mancos Shale, saline soils, or fragile soils, groundwater will not be discharged to surface water drainages, to minimize mobilization and transport of selenium, salts and sediment within the Colorado River Basin.

M&E-81: **(MLP)** Where linear disturbance is proposed, edges of vegetation removal will be 'feathered,' to avoid long linear habitat edges and support habitat complexity for wildlife. Additional trees will be removed along such edges to create irregularly shaped openings and more natural mosaic habitat.

M&E-82: **(MLP)** Cleared vegetation smaller than four inches in diameter will be stockpiled, shredded, and salvaged with topsoil. Cleared vegetation larger than four inches in diameter will be scattered over disturbed areas to accomplish reclamation objectives. Excessive vegetation larger than four inches in diameter may be removed from public land or shredded in place to be salvaged with topsoil. A wood cutting permit will be purchased from BLM for material removed from the site.

M&E-83: **(MLP)** Windrowing of Topsoil. [Use where appropriate based on topography – may not be appropriate for pads in steep areas or where pad size should be minimized.] Topsoil shall be windrowed around the perimeter of surface disturbance to create a berm that limits and redirects stormwater runoff and extends the viability of the topsoil per BLM Topsoil Best Management Practices (BLM 2009 PowerPoint presentation available upon request from the Grand Junction Field Office). Topsoil shall also be windrowed, segregated, and stored along disturbed surfaces or linear features for later spreading across the disturbed corridor during final reclamation. Topsoil berms shall be promptly seeded to maintain soil microbial activity, reduce erosion, and minimize weed establishment.

M&E-84: **(MLP)** Cattle guards will be installed and maintained whenever access roads intersect existing gates or fences.

Drilling

M&E-85: **(MLP)** Catalytic converters will be installed on all internal combustion engines to minimize emissions to Tier 3 levels.

M&E-86: Hazardous substances will not be used in drilling, testing, or completion operations, nor introduced at any time into the reserve or cuttings pit.

Utilization and Production

M&E-87: **(MLP)** Secondary containment shall include a study corrugated metal wall to create a basin, be lined with a heavy impervious poly liner and be protected with a gravel surface. Small hoppers or drip pans shall be installed at all loadout connections to catch drips and small leaks.

M&E-88: When special resource values are at risk, such as crucial wildlife areas, companies controlling access into these areas will gate and lock roads or restrict use to authorized users.

M&E-89: Speed control measures will be in place on all project related unpaved roads to reduce fugitive dust.

M&E-90: **(MLP)** Use enclosed tanks instead of open tanks or pits to reduce fugitive VOC emissions.

M&E-91: **(MLP)** Use vapor recovery units on oil, condensate, and produced water storage tanks to reduces fugitive VOCs and recovers BTU-rich vapors for sale or use on site.

M&E-92: **(MLP)** Use and maintain proper hatches, seals, and valves to minimize VOC emissions.

M&E-93: **(MLP)** Optimize glycol circulation and Install Flash Tank Separator (FTS) to capture methane and reduce VOC emissions on glycol dehydrators.

M&E-94: **(MLP)** Replace wet seals with dry seals in centrifugal compressors. Centrifugal wet seal compressor emissions from the seal oil degassing vent can be reduced by the replacement of wet seals with dry seals that emit less methane and have lower power requirements.

M&E-95: Reduce gas leaks and emissions from reciprocating compressors by the economic replacement of rod packing at frequent intervals.

M&E-96: Reduce methane and VOC emissions by installing or replacing high-bleed pneumatic devices with low-bleed pneumatic devices.

M&E-97: Reduce methane emissions by installing plunger lifts and smart automation systems which monitor well production parameters.

M&E-98: Implement a Direct Inspection & Monitoring Program which identifies and cost effectively fixes fugitive gas leaks using Leak Detection, Infrared Camera, Organic Vapor Analyzer, Soap Solution, Ultrasonic Leak Detectors, Measurement, Calibrated Bagging, Rotameters, and/or High Volume Samplers.

Site Stabilization, Reclamation and Monitoring

M&E-99: **(MLP)** During interim reclamation contour land forming will be used to create a visual barrier to the permanent structures location on the site.

M&E-100: **(MLP)** Re-topsoil and revegetate access road cut & fill slopes, backslopes and road shoulders, and borrow ditches. Also, revegetating the travel surface of surfaced roads and turnarounds, where practical. With low traffic roads, this will result in a hardpan, two-track road that is stable and requires less maintenance.

References

BLM. 1992. Handbook H-3042-1: Solid Minerals Reclamation. Release 3-275. BLM, Washington, DC. February 2, 1992. 104 pp.

_____. 2002. Handbook H-3600-1: Mineral Materials Disposal. Release 3-315. BLM, Washington, DC. February 22, 2002. 171 pp.

_____. 2011a. H-9113-1 Road Design Handbook. Bureau of Land Management, Washington, D.C.

BLM and US Forest Service (United States Department of the Interior, Bureau of Land Management, and United States Department of Agriculture, National Forest Service). 2007. Noxious and Invasive Weed Management Plan for Oil and Gas Operators: Grand Junction Field Office and Grand Valley Ranger District. BLM, Grand Junction Field Office, Grand Junction, CO. March 2007.

_____. 2007. Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development – The Gold Book. BLM/WO/ST-06/021+3071/REV 07. BLM, Denver, CO. 84 pp.

_____. 2008. Record of Decision, Programmatic Environmental Impact Statement for Geothermal Leasing in the Western United States – Appendix B. BLM Washington Office. December 2008.

RENEWABLE ENERGY (RE)

Standard Operating Procedures

RE-1: Authorize rights-of-way by applying appropriate BMPs from the BLM Record of Decision for Implementation of a Wind Energy Development Program (BLM 2005), land use restrictions, stipulations, and mitigation measures.

References

BLM (United States Department of the Interior, Bureau of Land Management). 2005. Record of Decision for Implementation of a Wind Energy Development Program and Associated Land Use Plan Amendments. BLM, Washington, DC. December 15, 2005.

TRANSPORTATION AND ACCESS (TA)

Standard Operating Procedures

TA-1: Continue coordination with counties and other agency road entities to promote utilization of best management practices for road maintenance they perform within GJFO boundaries.

Maintain an inventory of existing road and trail systems.

TA-2: **(MLP)** BLM Manual 9113, Roads (BLM 2011a) and BLM Handbook 9113-2, Roads – Inventory and Maintenance (BLM 2011b) will be used to guide all maintenance and road construction designs and requirements. Include definitions for functional road classification and maintenance levels for BLM roads.

TA-3: All highway rights-of-way and other road authorizations will contain noxious and invasive weed stipulations that include prevention, inventory,

treatment, and revegetation or rehabilitation. Road abandonment will include at least three years of post-abandonment monitoring and treatment.

TA-4: All travel management decisions will concur with the Bureau of Land Management, Grand Junction Field Office Travel Management Plan.

Best Management Practices

TA-5: In order to ensure public access and safety, the GJFO shall continue an active road maintenance program employing the use of redesign, blading, brush removal for sight distance as appropriate, scarification, graveling, water barring, low water crossings, spur ditching, seeding and installation/cleaning of culverts.

TA-6: NEPA Requirements – No new NEPA analysis will be required for road maintenance activities within the defined maintenance disturbance/easement footprint, which is defined as previously disturbed or maintained. Disturbance outside of the defined maintenance disturbance/easement footprint or road realignment will be subject to additional NEPA compliance.

References

BLM. 2011a. H-9113-1 Road Design Handbook. Bureau of Land Management, Washington, D.C.

BLM. Grand Junction Field Office Travel Management Plan (See Appendix M, Travel Management Plan, in the Grand Junction Field Office Proposed RMP/Final EIS)

RECLAMATION (R)

The objectives of interim reclamation are to restore vegetative cover and a portion of the landform sufficient to maintain healthy, biologically active topsoil; control erosion; and minimize loss of habitat, forage, and visual resources during the life of the well or facilities.

The long-term objective of final reclamation is to return the land to a condition approximating that which existed prior to disturbance. This includes restoration of the landform and natural vegetative community, hydrologic systems, visual resources, and wildlife habitats. To ensure that the long-term objective will be reached through human and natural processes, standards will be enforced to meet objectives for site stability, visual quality, hydrological function, and vegetative productivity.

Standard Operating Procedures

R-1: A reclamation plan will be provided to the BLM with the original proposed action or when activities are needed. The plan will follow the BLM Colorado Northwest District Template for Reclamation Plans (BLM 2012). Reclamation plans will discuss interim and final reclamation activities. The plan will include provisions for

a) Reclamation Timeline

b) Pre-disturbance Planning recommendations if applicable

c) Vegetation Monitoring Plan

d) Stabilization and Stormwater

e) Dust Abatement

f) Vegetation Clearing

g) Topsoil Management

h) Pit Closures if applicable

i) Recontouring and Seedbed Preparation

j) Application of Topsoil & Revegetation

k) Fencing

l) Management of Invasive, Noxious, and Non-Native Species

Best Management Practices

R-2: Trees and vegetation will be left along the edges of the pads whenever feasible to provide screening.

R-3: (MLP) To help mitigate the contrast of recontoured slopes, reclamation will include measures to feather cleared lines of vegetation and to save and redistribute cleared trees, debris, and rock over recontoured cut and fill slopes.

R-4: To reduce the view of production facilities from visibility corridors and private residences, facilities will not be placed in visually exposed locations (such as ridgelines and hilltops).

R-5: Production facilities will be clustered and placed away from cut and fill slopes to allow the maximum recontouring of cut and fill slopes.

R-6: **(MLP)** All long-term above ground structures will be painted [Covert Green] (from the BLM "Supplemental Environmental Colors" chart) to blend with the natural color of the late summer landscape background.

R-7: Projects should be located to take advantage of existing vertical features, such as landforms or existing stands of vegetation to provide visually screening.

R-8: **(MLP)** Projects should not be located in visually exposed locations, such as ridgelines and hilltops.

R-9: **(MLP)** Projects should be located in areas that will minimize the amount of cut-and-fill needed to meet natural grade.

R-10: **(MLP)** Linear disturbances (roads and pipelines) should follow the natural contours of the landscape as much as possible.

R-11: Project design should take into consideration any existing vegetation surrounding the project that can be used for visual screening. Care should be taken to preserve the integrity of the vegetation and the vegetation should remain standing and undamaged when the cut-and-fill slopes are recontoured.

R-12: **(MLP)** Thinning and feathering of existing vegetation may also be used in areas where clearing within dense vegetation is required. Thinning and feathering will reduce the hard line between new construction and existing vegetation and will emulate the forms of natural clearings.

R-13: **(MLP)** Production facilities should be placed to maximize recontouring of the cut-and-fill slopes and interim reclamation. Facilities should be oriented in the direction that is least visually obtrusive and should be clustered to reduce the overall impact and the area that will need to be visually mitigated. Facilities should be located away from the cut-and-fill slopes and, if possible, near the access road or entrance to the pad to maximize the total surface area that can be reclaimed.

R-14: **(MLP)** Cut-and-fill slopes should be recontoured to the approximate original contour or consistent with the adjacent topography so that the reclaimed landscape features blend into the natural surroundings.

R-15: **(MLP)** Berms may be utilized to provide visual screening, but should be used only when it makes sense when viewing the surrounding natural environment and should blend with the adjacent topography.

R-16: **(MLP)** Cleared vegetation and rocks salvaged during construction should be salvaged and redistributed over reshaped cut-and-fill slopes or along linear features to emulate the color and texture closer to that of the natural landscape and to help create microclimates to encourage vegetation growth. The material should be placed so that it appears to be naturally deposited.

R-17: **(MLP)** Above ground facilities should be painted a natural color selected from the BLM Standard Environmental Color Chart to minimize contrast with adjacent vegetation and/or rock outcrops. Color(s) should be selected in the field at the proposed project location and should be planned for the season with the greatest number of viewers. Selected color(s) should be one to two shades darker than those naturally occurring in the background landscape (this will also help with the effects of fading over time).

References

BLM (United States Department of the Interior, Bureau of Land Management). 1985a. BLM Manual 9113: Roads. Release 9-247. BLM, Washington DC. June 7, 1985. 83 pp.

_____. 1985b. BLM Handbook 91 13-2, Roads – Inventory and Maintenance. Release 9-250. BLM, Washington DC. December 19, 1985. 18 pp.

_____. 2012. Draft BLM Colorado Northwest District Template for Reclamation Plans- (Final expected June 2012).